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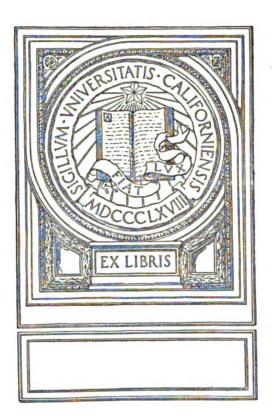
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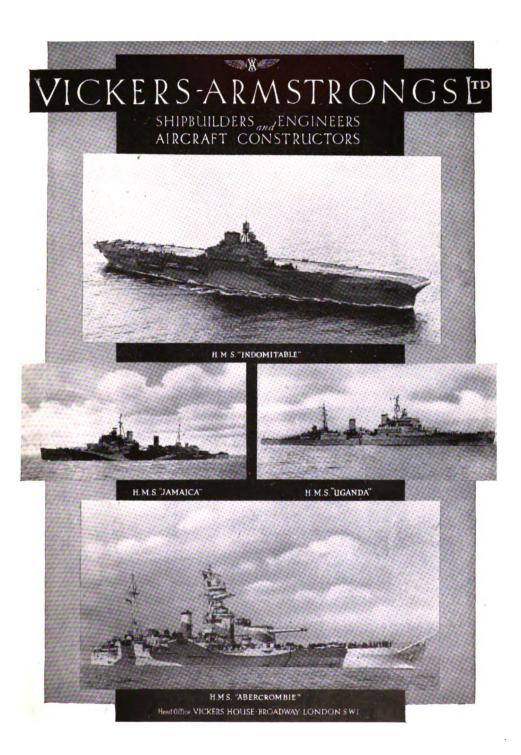


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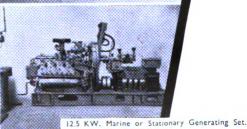












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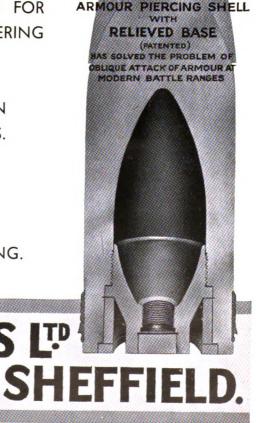
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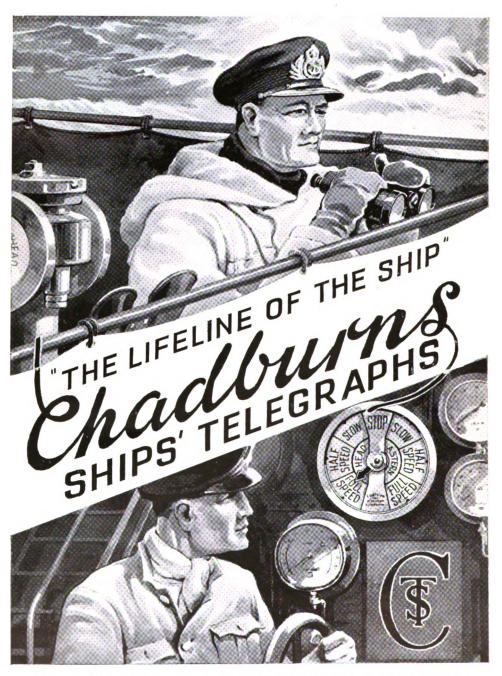
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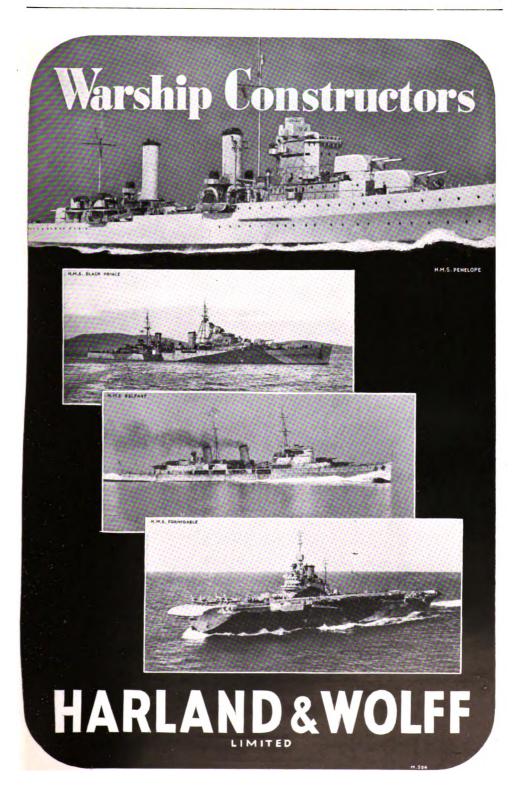
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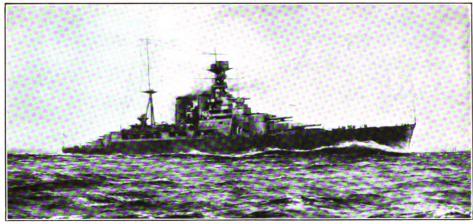
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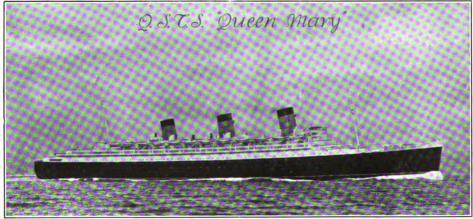
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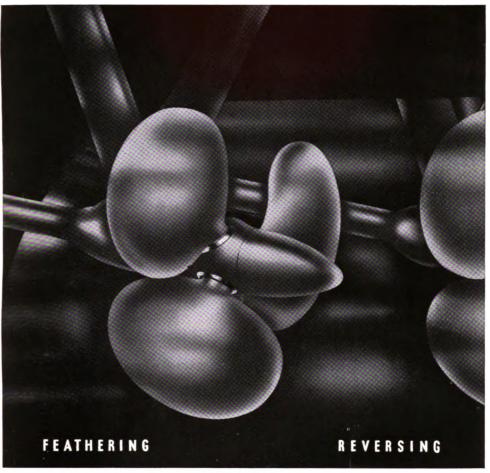
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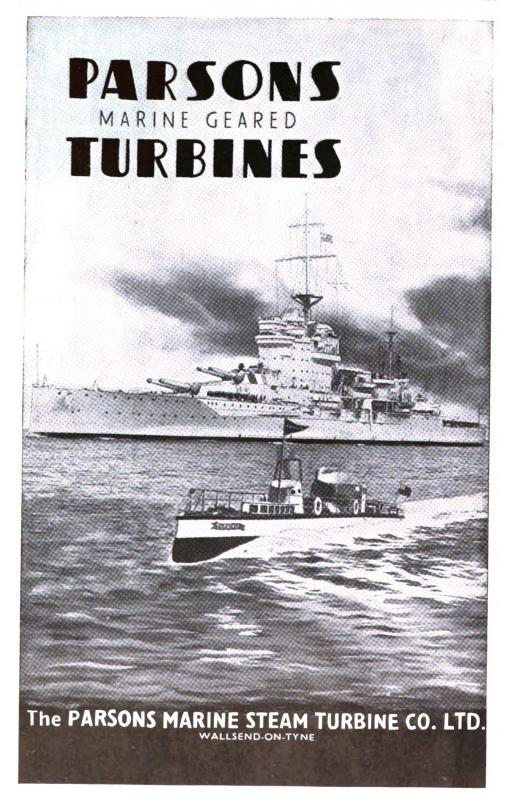
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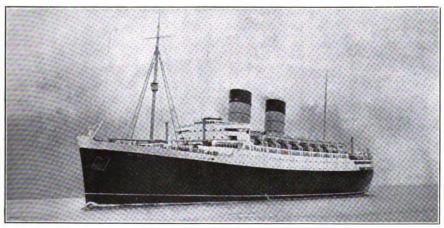
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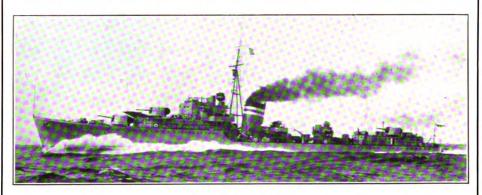
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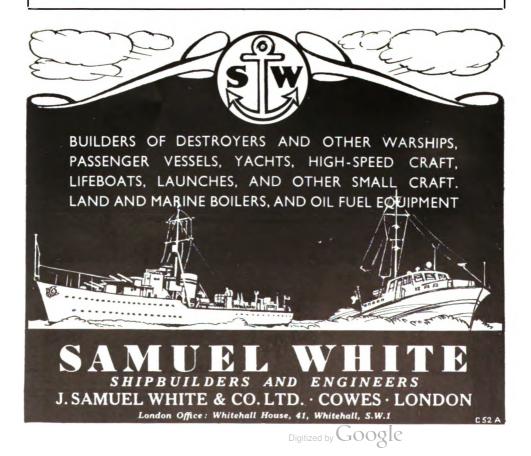
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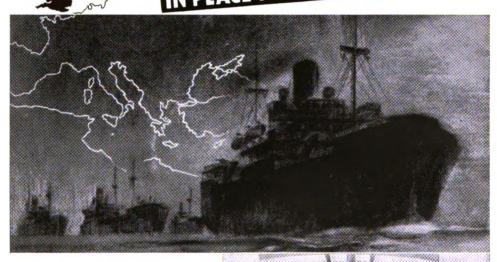


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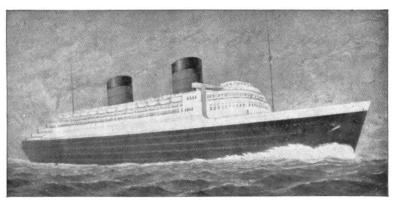
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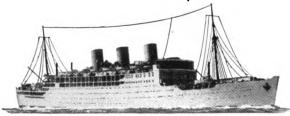
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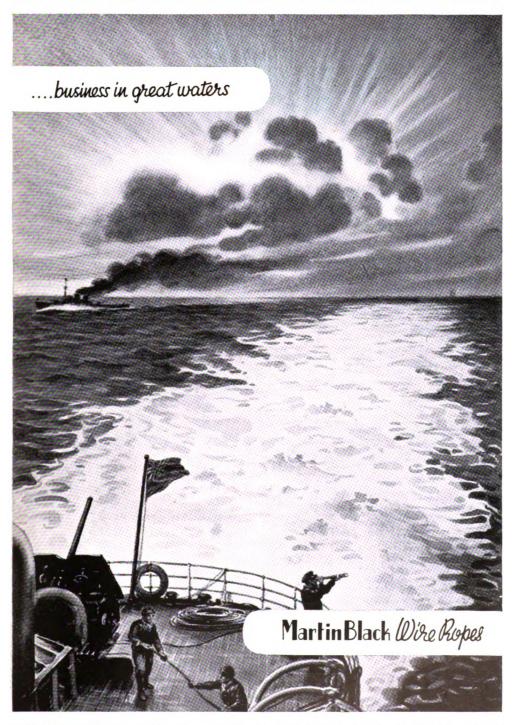
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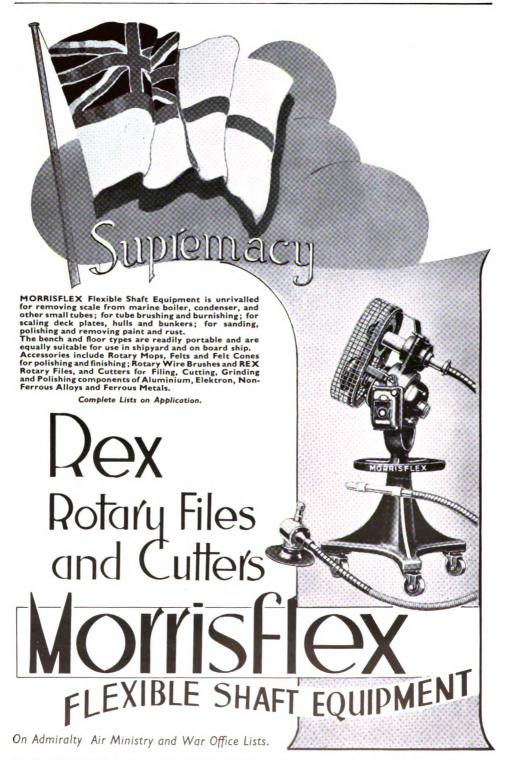
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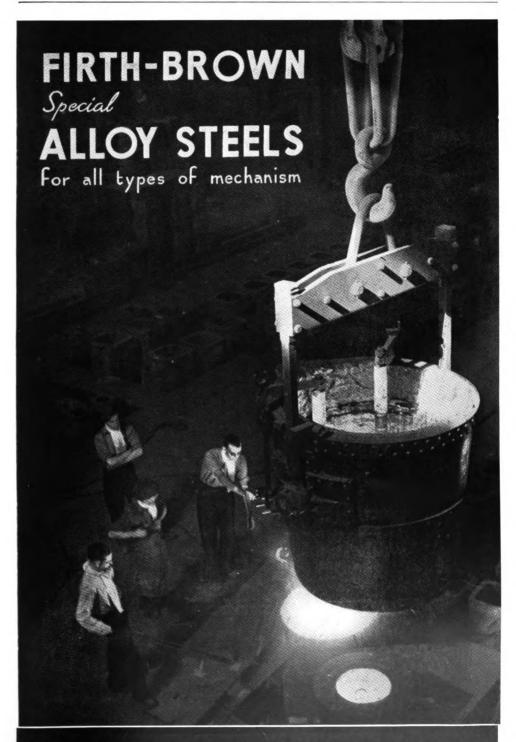


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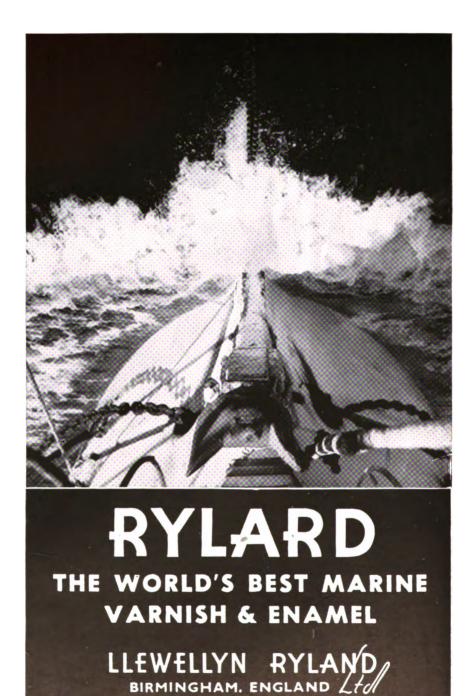
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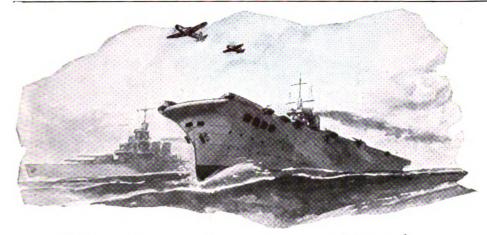


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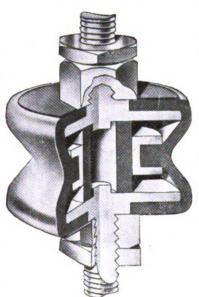






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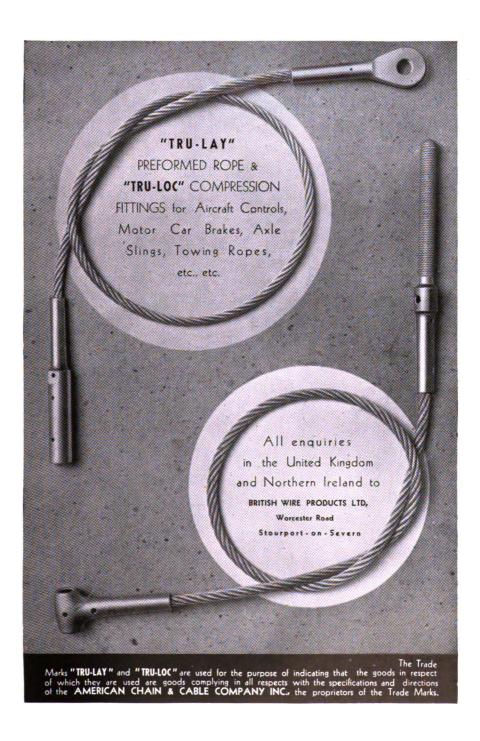
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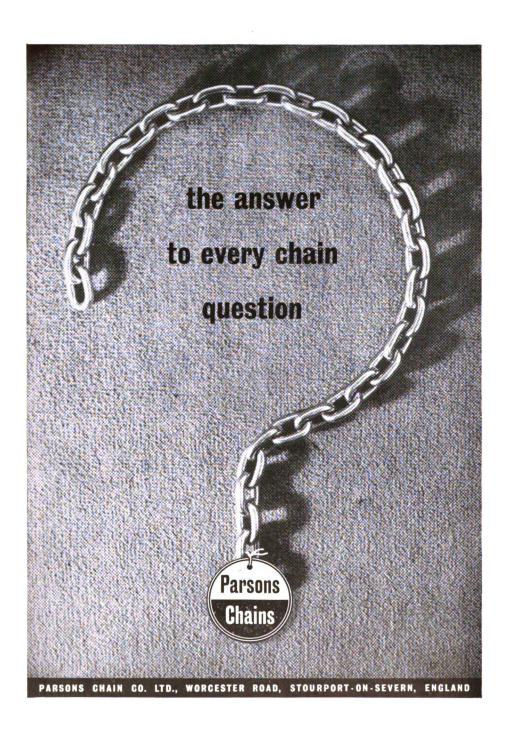
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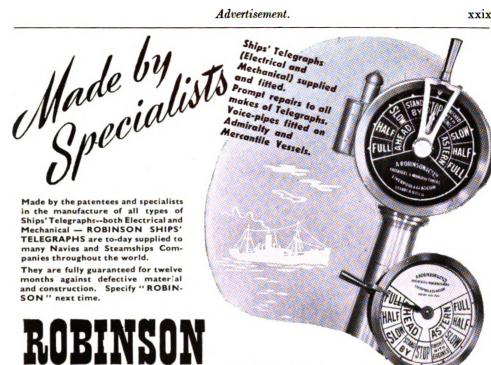
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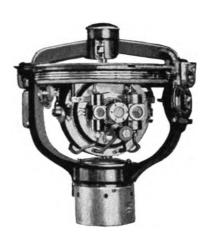
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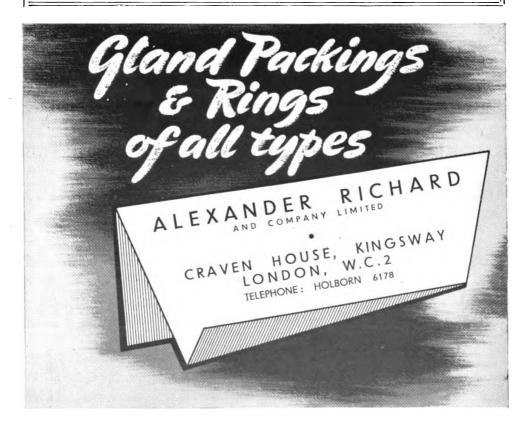


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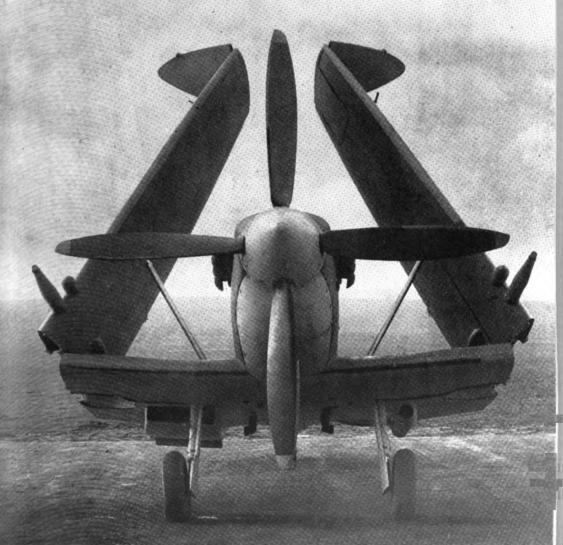
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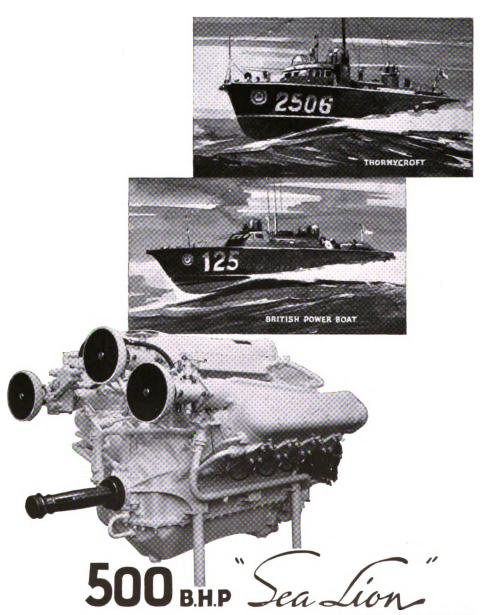


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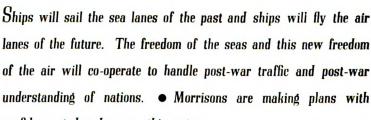


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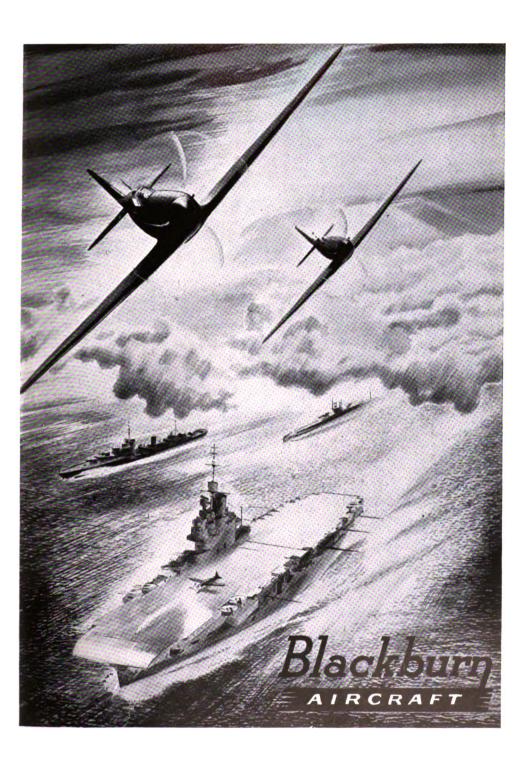


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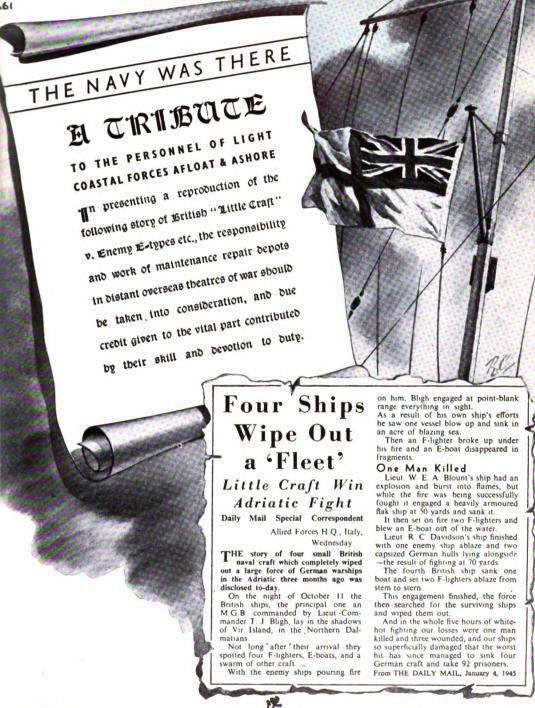
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CONTENTS

Preface	ge vii
REVIEW OF 1944.	
CHAPTER I	
THE ORGANISATION OF FIGHTING FORCES Rear-Admiral H. G. Thursfield	l
CHAPTER II	
A NAVAL CHBONICLE Captain E. A. Altham, C.B., R.N.	12
CHAPTER III	
FOREIGN NAVIES Francis E. McMurtrie, A.I.N.A.	72
CHAPTER IV	
THE FUTURE OF THE BRITISH MARITIME INDUSTRIES Sir Archibald Hurd	93
CHAPTER V	
THE AIR WAR AT SEA Major Oliver Stewart, M.C., A.F.C.	102
CHAPTER VI	
	111
The state of the Leonie was discussed to the state of the	•••
CHAPTER VII	
STRATEGY AND PROPAGANDA IN GERMAN NAVAL THOUGHT Dr. H. Rosinski 1	
STRATEGIAND I BOFAGANDA IN GERMAN NAVAL I HOUGHT Dr. 11. 1005116865	125
	125
CHAPTER VIII	
CHAPTER VIII	
CHAPTER VIII SEA-AIR-LAND POWER IN THE PACIFIC Air Commodore L. MacLean, M.C.	151
CHAPTER VIII SEA-AIR-LAND POWER IN THE PACIFIC Air Commodore L. MacLean, M.C. CHAPTER IX THE LANDING IN NORMANDY Gordon Holman	151
CHAPTER VIII SEA-AIR-LAND POWER IN THE PACIFIO Air Commodore L. MacLean, M.C. CHAPTER IX THE LANDING IN NORMANDY Gordon Holman CHAPTER X	151 160
CHAPTER VIII SEA-AIR-LAND POWER IN THE PACIFIC Air Commodore L. MacLean, M.C. CHAPTER IX THE LANDING IN NORMANDY Gordon Holman	151 160
CHAPTER VIII SEA-AIR-LAND POWER IN THE PACIFIO Air Commodore L. MacLean, M.C. CHAPTER IX THE LANDING IN NORMANDY Gordon Holman CHAPTER X	151 160
CHAPTER VIII SEA-AIR-LAND POWER IN THE PACIFIC Air Commodore L. MacLean, M.C. 1 CHAPTER IX THE LANDING IN NORMANDY	151 160 168
CHAPTER VIII SEA-AIR-LAND POWER IN THE PACIFIC Air Commodore L. MacLean, M.C. I CHAPTER IX THE LANDING IN NORMANDY	151 160 168
CHAPTER VIII SEA-AIR-LAND POWER IN THE PACIFIC Air Commodore L. MacLean, M.C. I CHAPTER IX THE LANDING IN NORMANDY	151 160 168
CHAPTER VIII SEA-AIR-LAND POWER IN THE PACIFIC Air Commodore L. MacLean, M.C. I CHAPTER IX THE LANDING IN NORMANDY	151 160 168
CHAPTER VIII SEA-AIR-LAND POWER IN THE PACIFIC Air Commodore L. MacLean, M.C. I CHAPTER IX THE LANDING IN NORMANDY	151 160 168
CHAPTER VIII SEA-AIR-LAND POWER IN THE PACIFIO Air Commodore L. MacLean, M.C. I CHAPTER IX THE LANDING IN NORMANDY	151 160 168 190
CHAPTER VIII SEA-AIR-LAND POWER IN THE PACIFIO Air Commodore L. MacLean, M.C. I CHAPTER IX THE LANDING IN NORMANDY	151 160 168 190



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CONTENT

Miscellaneous				•	1	PAGE
DIARY OF NAVAL EVENTS, 1944	••	••	••	••	••	3 10
Naval Authorities						
PRINCIPAL NAVAL OFFICIALS, BRITISH AND FOR	REIGN			• •		322
PRINCIPAL NAVAL OFFICIALS, BRITISH AND FOREIGN NAVAL ATTACHES	••	••	••	••	••	323
PICTORIAL SEC	rion	Ι.				
Silhouettes of Warships						
Battleships					••	Pl
Aircraft Carriers and Tenders						₽7
Battleships				• •		P10
FLOTILLAS						P23
			••			P27
The state of the s	_					
Cenedat Index			١			
GENERAL INDEX	••	••	}	At end	of vo	lume
INDEA TO INCHIDES AND FLANS OF WARSHIPS	• •	• •	٠٠,			

LIST OF ILLUSTRATIONS

H.M. Submarine Tantalus	••	Frontispiece		
		J A	CING PAGE	
BRITISH MOTOR TORPEDO BOAT	••	••	8	
BRITISH NAVAL COMMANDO IN NORMANDY	••	••	9	
ROYAL MARINES LANDING AT WALCHEREN	••	••	24	
WITH AN ABCTIC CONVOY	••	• •	25	
CLEARING BEACH OBSTRUCTIONS	••	• •	40	
An Escort Carrier in the Arctic	••	• •	4	
A British Submarine in the Indian Ocean	••	••	56	
H.M.S. Argonaut, CRUISER, AT SPEED	••	••	57	
SEA-AIR RESCUE LAUNCH, OF THE R.A.F	••	••	72	
United States Battleship in Action	••	••	73	
Amphibious Force approaching the Riviera Coast	••	••	88	
U.S.S. Pennsylvania Bombarding Guam	••	••	89	
LOCATING MINES IN THE RIVER SCHELDT	••	••	104	
Landing Craft before the Invasion of Normandy	• •	••	105	
BATTLE OF THE CORAL SEA. U.S.S. Lexington on Fire	••	• •	120	
BATTLE OF MIDWAY. U.S.S. Yorktown HIT BY BOMBS	••	••	12	
U.S.S. Franklin on Fire after Bomb Hit	••	• •	136	
U.S.S. Franklin beturning to New York Navy Yard	••	••	137	
A British Escort Carrier Squadron	••	••	155	
CARRIER AIRCRAFT RANGED FOR TAKING OFF	••	••	153	
Barracudas set off for Norway	••	• •	168	
AIRCRAFT SET OFF TO ATTACK SUMATRA	••	••	169	
Approaching the Normandy Coast, June 6, 1944	••	••	184	
A ROCKET-ARMED L.C.T. IN ACTION JUST REPORT A LANDING			18/	

T	TRT	OF	ILLUSTRATI	DMG
	шл	OT.		

٧i

					FA	CILNG:	PAG
Japanese Ship sunk off Truk	••	••	••	••	••	••	18
Admiral Dornitz	••	• •	••	••	••	••	18
American Task Force in a Marshall Is	••	••	••	••	19		
BRITISH AIRCRAFT RANGED FOR TAKING O	FF	••	••	••	••	••	19

PREFACE

ONCE again the difficulties of book production in war time have conspired to delay the appearance of the current number of "Brassey's Naval Annual" for many months after the date at which it was hoped and intended to publish it. This is the more regrettable in the present year, because of the great events which have taken place since it was compiled, but before its publication, no mention of which appears in its pages. "Brassey" for 1945 was compiled while the war in Europe was in full blast, and though it appeared fairly certain that victory in the West would be achieved before the year was out, none could then have asserted with confidence just when the end would come. It makes its appearance at the time when the whole of Germany has already been in occupation by the victorious Allies for some weeks and the leaders of the three principal victorious Powers have already held a conference in Berlin itself. Restrictions imposed by censorship and the needs of security in time of war have already largely been relaxed at the date of publication; but I would ask readers to remember that they were in full force throughout the full period between the compilation of the book and the date when it is possible to send the final version of its contents to press. Those restrictions, as I have pointed out before since the outbreak of war, inevitably have a greater delaying effect on a book of reference which deals very largely with actual war material than on others; and moreover, the delays in production caused by shortage of man-power have not yet been eliminated, and indeed cannot be, until a much closer return to normal is achieved than is to be expected while the war has only been over in this hemisphere for a few weeks, and is still in full swing in the other.

This year, Captain Altham has been kind enough—now that circumstances allow him once again to rejoin the contributors to "Brassey," after an absence of some years—to take over the task of compiling the Naval Chronicle of 1944, prepared in the issues of recent years by the editor, who was thus left free to contribute an examination of the issue of amalgamation of the Fighting Services. Mr. McMurtrie again contributes an article on Foreign Navies, and Sir Archibald Hurd the Maritime Mr. Gordon Holman describes the landing in Normandy, as he saw it—and there was little that he did not contrive to see—Admiral Sir William James contributes a thoughtful forecast of the influences that should govern British Naval policy after this war, and Dr. Rosinski an analysis of the politics and strategical theories that governed German naval policy in the past half-century. This study illustrates very clearly how difficult, if not impossible, it appears to be for the continental strategist really to understand the nature of sea power, or the naval strategy that grows out of full understanding of it.

The rest of this year's letter-press is devoted to the air war at sea, and the course of the war in the Pacific. The former is reviewed as a whole, as in recent years, by Major Oliver Stewart, and the latter by Dr.—now

Lieutenant U.S.N.R.—Bernard Brodie, the author of the important book on Naval Strategy which was reviewed in last year's issue. It should be generally agreed that he has unique qualifications for that study, and I am especially grateful to him for having found the time to contribute it to "Brassey's Naval Annual." Air Commodore MacLean, who visited every theatre of operations in the Pacific in the capacity of member of a British Service Mission, deals with the subject of the close union between the separate Services which the conditions there make specially necessary, and its influence on strategy generally. Finally, in the sphere of air operations at sea, my old contributor who writes under the pseudonym of "Volage"—whose return to the company of contributors to "Brassey" I am also glad to welcome—reviews the development of ship-borne aircraft, and of the technique of their operational use.

The Reference Section this year has been revised by Mr. Warren, who has kindly taken up the task which Mr. Thorpe was unable to continue to undertake. This Section, in accordance with the standing practice of past years, has been revised up to January 1 of the year of issue only; and if readers are surprised to see that the ships of certain Nations now liberated are recorded as being "under German control," I would ask them to remember that they were so at the date that the revision was made. Again, I cannot claim that the information in this Section is in any way complete; far from it. All that it purports to do is to embody all reliable information that had been allowed to become public property up to the end of 1944.

As usual, I desire to acknowledge with appreciation and thanks the courtesy with which various authorities, British and Allied, have responded to my requests for data, information or assistance.

H. G. THURSFIELD.



CHAPTER I

THE ORGANISATION OF FIGHTING FORCES

It will generally be admitted on all sides that the most outstanding lesson to be learned from the course of the great war which seems, in Europe at least, as these words are being written, to be drawing to a close, is that victory is won, not by this arm or that, but by the full collaboration of all arms; by their employment, not independently, each in its own sphere or in its own element, but interdependently, all directed alike towards one end. That lesson has been driven home as much by our reverses as by our successes; for every reverse has been traceable ultimately either to a lack of collaboration between the separate arms on our part, or else to its having been achieved to a greater degree by our enemies. To demonstrate this proposition, it is not necessary to examine in detail every campaign or action that has been fought in the last five years, though the same conclusion is reached in the case of each of them; it will suffice for my purpose here to take a few examples.

In the Norwegian campaign the German success on land was by common consent largely the result of the close integration of their air forces with their armies; the whole of the energies of the Luftwaffe were directed to furthering the advance of the military forces with the aim, as quickly as possible, of completing the military occupation of the whole country. Moreover, the ultimate object of that occupation was the acquisition of the harbours of Norway whence U-boats and sea-going aircraft could prey on British Atlantic communications, which were vital to us, with greater freedom than was possible to them when compelled to work from German bases only. On the other hand, our great handicap was that we lacked at that time the air arms needed by sea and land forces operating against the German invaders of Norway; and that, moreover, British sea and land forces alike lacked both the equipment and the training needed for the The subsequent successful conduct of an amphibious campaign overseas. campaign in France told the same story on both sides. The enemy's chief object was the acquisition of the French Atlantic ports, needed for the same purposes as those of Norway-I leave out of account for the time being the question, about which two opposite views are held, of whether a serious invasion of this country was intended by Germany in 1940. German success in France was chiefly due again to the full integration of land and air forces under a common direction to the same end. Allied failure was largely due to the inadequacy—which arose from various prewar causes—of the air arm which made full collaboration, of the standard set by the Germans, an impossibility. Yet when circumstances made possible the full collaboration of all three arms, sea, land, and air, of the British Forces at Dunkirk, it became possible to snatch them from what had seemed inevitable and irretrievable disaster.

The same conclusions emerge from study of the whole course of events in the Mediterranean. As long as we were deficient in this arm or that we had the greatest difficulty in holding our own, despite the wonderful individual prowess of the fleet under Admiral Cunningham or the armies under General Wavell and his successors. The final success in the

2

Mediterranean area, which started with the expulsion of the Axis forces altogether from North Africa, followed from the employment of all arms towards a common end. The armies and air forces were built up to the necessary strength in Egypt by virtue alone of control of the outer seas by the Navy and, in certain areas, by the air forces working with it; their famous final advance westwards was achieved through the intimate collaboration of all three arms. The armies and air forces which secured control of North-West Africa did so only by virtue of the naval control of the intervening sea across which they had to be conveyed to reach their theatre of operations. The military occupation successively of the whole of North Africa enabled air forces to be based within reach of the whole African shore of the Mediterranean, whereby control of the sea routes from end to end could once more be secured by sea and air forces, in proper proportion, working in collaboration. The control of the Mediterranean sea routes thus acquired enabled the military occupation to be extended through the intermediate islands-needed again as air bases-to Sicily, Italy, and eventually to Southern France. The same story of success following full collaboration, the provision of all arms in adequate proportion, and their common direction to one end, is told by the course of events in the English Channel theatre from June 1944 onwards.

On the other hand, failure in collaboration has invariably been the prelude to defeat. An example of this on the small scale is to be found in the ill-starred campaign in Greece in 1941. The British forces, both land and air, but especially the latter, were all too weak to accomplish the task, for which they had been sent to Greece, of holding up the advance of Axis forces southward through that unhappy country; but although at first, when troops and air forces pursued different tactical objects, they produced little effect against an enemy employing great and integrated forces, as soon as tactical collaboration was established, the improvement in results obtained became very marked The same thing on a much larger scale was demonstrated at sea. The enemy, realising what it would almost seem that many people in this country had forgotten, that British strength depended fundamentally on our being able to retain command of the sea and assure the continuity of our sea communications, made one of his greatest efforts in the attack which had nearly brought him victory in 1917, on merchant shipping by U-boats. British strength in the destroyers, corvettes, and other classes of the small ships needed to defend shipping against U-boat attack, had been allowed, in the years of treaty-making between the wars, to fall far below strategic needs, on the mistaken theory —the fallacy of which was constantly pointed out by Admiral Sir Herbert Richmond and other writers—that the numbers of such ships that we should need in war would be governed by the strength of foreign navies in submarines, rather than by the volume of British traffic needing protection. At the same time, the air forces needed for work at sea in the defence of shipping, in collaboration with the sea forces performing the same duty, simply did not exist. Even the squadrons which had inherited the functions of the Royal Naval Air Service in the 1914-18 war were no longer called "Naval Co-operation Squadrons" but had been renamed "General Reconnaissance Squadrons".

Taking advantage of this lack of the forces needed for the most fundamental of British tasks in time of war, the enemy put vast resources into the multiplication of U-boats, standardised both their construction and tactics so as to obviate the need for intensive training and great skill, and

devised methods of attack that could exploit the British shortage in defending forces. Those methods could only be countered by intimate collaboration between sea and air forces. Sea forces alone could not have done it, unless in numbers so vast as to be quite impracticable to provide; air forces alone could not do it at all, since an aircraft is completely impotent against a U-boat once the latter has dived below the surface, and, moreover, in the early months of the war, they were also impotent at night, when the most damaging attacks by the U-boats were made. But ships and aircraft in collaboration—as was mentioned by Mr. Churchill in a speech in Parliament on February 11, 1948—proved deadly, once both were available in sufficient numbers.

Yet it was not until April 1948 that they were available in sufficient numbers. It was only then that long-range aircraft, working from both sides of the Atlantic were provided in sufficient force to give adequate protection to trans-Atlantic shipping, while the gap in the middle, that neither of them could reach, was bridged by means of the small so-called "escort carriers". Yet all through 1940, 1941, and 1942, great resources in the air were being devoted to the bombing of German shipyards and German cities; the first, on the theory that to do so would prevent U-boats being built at all, and the second, presumably on the theory, so often advanced by air enthusiasts before 1939 yet now fully disproved by the hard experience of six years of war, that it would induce the enemy people to give up the struggle and make peace. Be that as it may, and whatever the theories that were the basis of our methods, the two arms were pursuing different aims and objects, neither of which were being attained. building of U-boats was not being held up by the bombing of shipyards, but on the contrary went on steadily, on a uniformly rising curve. The German people were not being induced to force Hitler to make peace, but on the contrary, fought on until their armies were beaten in the field in their own country, despite an unthought-of intensification in the weight of the bombing attack. Atlantic convoys were not getting through, but on the contrary, so heavy were their losses, especially in ships carrying the oil fuel on which all arms relied, that it began to be doubtful whether the bombers would be able to get off the ground, As the Prime Minister and the President of the United States remarked, in summing up the whole course of the U-boat war, in 1941 and 1942 the issue hung in the balance. But in 1943, when full collaboration between sea and air forces in the Atlantic was at last established, the upper hand was gained which was never again lost.

Pacific operations have told the same story. The initial Japanese attack on Pearl Harbour was an outstanding example of intimate and effective collaboration between sea and air forces, rendered easier in that case by the fact that they were all drawn from the Japanese Navy and not from separate Services. The American defence against that surprise attack largely failed because of failure in collaboration between the Army and the Navy—vide the Report of the Commission of Enquiry held immediately afterwards.* All the Japanese operations by which they overran the Philippines, the Dutch East Indies, and the South Sea Islands were little masterpieces of full collaboration between all arms; and each move forward was preceded by careful preparation so that full collaboration could be achieved for the next step. On the British side, the disaster of the loss of the Prince of Wales and Repulse was the direct result, not only

* "Brassey", 1942, page 111.

of lack of provision of the different arms in due proportion, but of the failure to use in collaboration even those that were available. And the disaster of the loss of all Malaya, culminating in that of Singapore, was traceable largely, of course, to the numerical weakness of the forces defending those possessions, but even more to the fact that the sea and air arms necessary to an adequate resistance to an invasion on the scale to be expected were not provided to collaborate with the military garrison of that territory. The fact was, of course, that in the military situation then existing in Europe, they simply did not exist; but I am not here concerned with the causes of the failure, or omission, to supply properly balanced forces of all arms for the defence of Allied possessions in the East Indies, but merely to point out the inevitable result of their lack. It is not a question of numbers alone, as can be seen from the final phases of the

campaign in Malaya, culminating in the fall of Singapore.

There is nothing new in this proposition. It was pointed out many years ago by that great writer on the art of war, Colonel Henderson, that the experience of all wars in which this country has been engaged had pointed to the same conclusion. Since his day, of course, a new arm had appeared in the shape of air forces, which are unhampered by many of the restrictions that apply to land and sea forces; but there is nothing very new in the appearance of a new weapon nor a new instrument of warfare. Nor is there anything very new in the claim, made by the enthusiasts for every new weapon as it makes its appearance, that it is going to win wars on its own, and to render all older weapons obsolete; in fact, that claim has always been made, but has never been borne out. Every new weapon, if it has proved to be effective at all—some new weapons from which much had been hoped by their inventors have never got farther than the experimental stage—has fallen into its place in the belligerent's armoury, and has added its power to his total military strength in its own sphere; but however powerful and seemingly omnipotent it has been, it has always sooner or later bred its own antidote. When the locomotive torpedo made its appearance in the 1870's, it was claimed that, as it could destroy any battleship afloat, any warships larger than the torpedo boat were obsolete. The antidotes to the torpedo boat, in the shape of the medium-sized quickfiring gun in battleships, and the destroyer, larger, faster, and more heavily armed than the torpedo boat and capable of overtaking and destroying it, soon made their appearance. The same claim was made for the submarine, not only by Robert Fulton, for the submarine which he invented and built at the end of the eighteenth century, but also by would-be responsible persons after the end of the 1914-18 war, when Admiral Sir Percy Scott

able element in the American forces now operating close to Japan.

The same claim was bound to be made for the aircraft when in due course it made its appearance; and it has duly been made by many enthusiasts. Indeed, it is still being made by a number of authors, of whom perhaps Major Seversky has been the most vociferous, though apostles of the same creed have not been lacking in this country. Yet surely it should be generally admitted that the experience of five and a half years of war in Europe has disproved it. Germany was subjected to a weight of air attack immensely greater than the most sanguine of air enthusiasts ten years ago could have thought possible; yet even that

bombarded all the newspapers with the ever-repeated question "What is the use of the battleship?" That question would seem to be fairly effectively answered to-day by the fact that battleships form an indispens-

weight of air attack did not come near to achieving the results that were hoped from it and prophesied for it. After the occupation of Germany it was discovered that three-quarters of her capacity for the production of synthetic motor fuel-which had been one of the chief targets for air attack from the beginning of the war—was still capable of full operation. Her general industrial capacity though, of course, hampered by the damage it had received, and by the necessity for being moved from its earlier location and put underground, was not diminished in any greater pro-It was not until her armies were beaten in the field on her own territory that Germany was actually defeated or that her army and rulers even contemplated acknowledging defeat. There can be no other conclusion from these events than the old conclusion that wars are won by winning battles, by defeating and eliminating the armed forces of an enemy; and from that conclusion emerges the corollary that there is no short cut to victory which will dispense with the necessity for winning If that conclusion be conceded—as it must be by all but those who are swayed solely by preconceived prejudices rather than argument and reason—it must be admitted that any effort devoted to objects unconnected with the winning of battles is inevitably wasted. And that brings us back to the proposition that only when all arms are directed to the same end can victory be assured.

I have pointed out earlier how this lesson was brought home very forcibly to our American Allies by the events at Pearl Harbour on December 7, 1941, with the result that their Service leaders quickly recognised the paramount necessity of precautions against any survival of the lack of inter-Service collaboration then manifested. One of their most successful commanders, Admiral Halsey, who has held sea-going commands throughout the victorious advance westwards across the Pacific, in a series of amphibious operations by land, sea, and air forces in collaboration, made it a principle that there should be no distinction of Service amongst the officers employed on his staff. He appointed to each position the officer best fitted for the work attached to it, regardless of whether he belonged to the Navy, to the Marines, or to the Army; and moreover he ordered that they should all wear the same uniform. A visitor to his headquarters had no means of knowing from which Service any staff officer with whom he might come in contact had originally been drawn. Admiral Halsey's operations were so uniformly successful, and the spirit of collaboration, and absence of any inter-Service jealousy or disagreement, in the forces under his command were so very marked, that many people have urged that his example should be followed and that the same principle should be carried even farther to the point of amalgamation of all fighting services, land, sea, or air, into one fighting force. The same conclusion has been reached, and the same action has been urged in this country. independently by other observers, also impressed, as a result of analysis of war experience in the North African, Mediterranean, and Atlantic theatres, with the supreme need to insure full collaboration of all arms, not only in the field but also on all planes up to the highest, and by the lack of collaboration which the system of separate Services seems to some extent to have bred. They would amalgamate Army, Navy, and Air Such an amalgamation would be so far-reaching Force into one service. a change that it seems desirable to examine it from all aspects in order to make sure that of the results that would flow from it, not all of which could be clearly foreseen, the good should unmistakedly outweigh the bad.

It has been argued that the need for some sort of amalgamation has clearly been felt in the past since each Service already actually maintains the other Services in miniature within its own organisation. for instance, has its own army in the Royal Marines and its own air force in the Fleet Air Arm. The Army possesses its own navy in the shape of the R.A.S.C. Motor Boat Companies and Water Transport Companies and its own air force in the shape of the Artillery Observation aircraft and the gliders of the Air-borne Divisions, both of which are manned by Army The R.A.F. possesses its own navy in the shape of its Sea-Air Rescue Craft and other flotillas of motor boats which work in conjunction with those air forces that operate over the sea; and its own army in the R.A.F. Regiment, which provides the guards for aerodromes. There are thus, in effect, nine fighting services altogether in the British Forces, a form of organisation which at first sight seems clearly illogical. United States Forces the organisation is somewhat simpler, since in America the principle of constituting the air arm as a service separate from the Army and Navy is not accepted. Both Army and Navy use aircraft as part of their ordinary equipment, in just the same way that they are both equipped with artillery. But the same tendency to the creation of a service within a service is also to be noted there, in that the time-honoured institution of a Marine Corps exists in America as in this The U.S. Navy thus possesses its own army of Marines just as does the British Navy; and the U.S. Army possesses its own Harbour Craft Companies which navigate not only inland waters, but also the coastal waters of the sea, if the Army's needs so dictate. There is thus in the American Forces much less multiplication of different units than in the British: and if they had found it necessary, with only two main services and only four minor subdivisions, to adopt a policy of amalgamation in order to achieve full collaboration, the need should presumably be even greater in the British Services.

Amalgamation, however, would undoubtedly involve abandoning many things by which each of the Services at present sets much store, and which undoubtedly have very considerable moral value, in the shape of tradition and esprit de corps. It is thus clearly desirable, before these things are thrown overboard, to be quite sure that that is the only way of achieving the desired end. Moreover, there are solid reasons for the differentiation between soldiers and sailors, based on severely practical considerations; and it would clearly be highly unwise to ignore experience and practical necessities in favour of a form of organisation built up de novo from pure theory—although in the political sphere that sort of thing seems to be very much in the fashion these days. The desired end is full collaboration between different Services and their common direction towards the same If that end can be achieved under the existing organisation—which, in part at least, has stood the test of time and has a great deal to recommend it—it is surely preferable to do so than to scrap it and adopt a wholly new and untried form of organisation which may prove, as such things often do, to possess all sorts of unforeseen defects and disadvantages. Whether or not that is possible is a point upon which history can perhaps give some guidance, in spite of the fact that in the wars of the past only two Services were concerned instead of the three which we—though not the Americans—have now adopted.

The history of British wars provides many instances of combined operations, some of which have been successful, others disastrous. The

principle of a unified command has on occasion been adopted, though more generally the naval and military commands have been independent. History does not support the theory that a unified command is an indispensable condition for success, inasmuch as some of the most successful of combined operations have been conducted under the other system. it does support the proposition that, whatever the system of command, full and cordial collaboration between the separate Services, on all levels from the commanders downwards, has been an indispensable condition of success; and it also provides evidence that that condition is fully attainable under an organisation based on separate Services and completely independent commands in Army and Navy. One need only quote the case of the Earl of Peterborough, Supreme Commander of British Forces in the War of the Spanish Succession, to demonstrate that the unified command does not necessarily of itself ensure success. On the other hand, the examples of Wolfe and Saunders at Quebec, or Barrington and Grant in the West Indies, are proof that perfect collaboration of the standard demanded for success has been attainable under the system of separate Services. Indeed, its attainment has presented no difficulties, provided that the commanders have recognised its necessity, have been on good terms with each other, have had a clear conception of the function and limitation of their own and the other Services and have insisted on mutual understanding, help and collaboration by all ranks under their respective Moreover, we have seen the same thing in our own times. General Eisenhower had under his command forces drawn from not two Services, or three, but five—three British and two American; yet by common consent full collaboration of the highest standard was eventually achieved throughout. None of these experiences of the past, distant or recent, bears out the contention that amalgamation is a practical necessity in order to achieve the desired standard of collaboration.

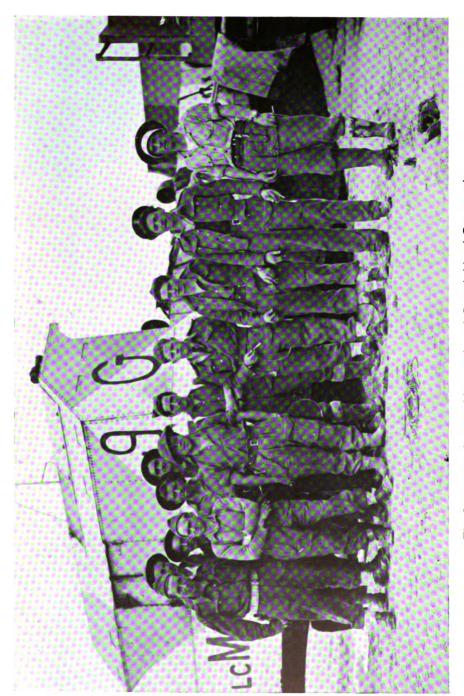
It seems therefore desirable to examine the causes which have brought differentiation between the Services. I leave out of account for the time being the question whether the British system of constituting air forces into a third Service, or the American system of adhering to the timehonoured organisation which differentiates between land and sea forces only, is the sounder. It will suffice to note that the three-Service system has been adopted in this country and there seems little likelihood, or even possibility, of its being modified in favour of any return to a two-Service system; and that the American Forces, having had war experience both of their own organisation and of ours, are quite determined never to adopt the latter. But history again is illuminating on the causes of differentiation between Army and Navy. The early history of navies shows the soldier affoat, maintaining his traditional position as the fighting man, whatever the place and conditions in which fighting had to be done, the seaman at first merely providing the vehicle for carrying him to battle. It was Drake who was the first to recognise that this system was unworkable and insisted that all afloat in his ships should be "one Company". abolishing the distinction between the seaman and the fighting man. will have the gentlemen haul and draw with the mariners," was his method of laying down the great principle that all in a ship-of-war, as well as any other ship, must be professional seamen, live by the sea and hold the true faith of the sea. Seamen indeed do not form a race apart but they do form a profession apart, for those unaccustomed to life afloat are frequently incapacitated for long periods when they find themselves on the sea. Most

landsmen, in fact, are miserable afloat, except in the comparatively rare periods of calm weather; not everybody has a taste for seafaring—though the proportion of Englishmen who have is probably higher than that of most nationalities—so that the seafaring branch of the fighting forces must, in practice, inevitably be differentiated from the landsmen. On the other hand, the profession of soldier too, especially in these days, is a whole-time job in itself, just as much as that of seaman. It is not physically possible for any man to be fully efficient in two separate professions as different from one another, and each as exacting, as that of the modern soldier and the naval seaman of to-day—or indeed the naval seaman of any past age.

Thus it seems clear that, even if on the grounds of logical organisation and the need for "integration of the Services" in order to ensure that they shall all direct their efforts towards the same end, the amalgamation of Army, Navy, and Air Force into one Service were decreed to-morrow by a courageous stroke of the pen, actually the existing differentiation would in practice have to persist. The seaman would have to remain a seaman, and the soldier to remain a soldier if they were to maintain, as clearly they would be required to, their present standard of professional efficiency. Any step in the direction of assimilating the duties of soldier and seaman could hardly have any result other than to reduce efficiency in one capacity or the other; for there is much truth in the old saw that Jack of all trades is master of none. The only actual difference would be that the traditions of both Services, by which they set so much store, would have to be scrapped, and it is difficult to see how the great object of collaboration of different arms would be served by that change.

But, it is argued, the differentiation of fighting men into different Services leads to inequality of treatment in the matter of pay and allowances and thus to discontent; if they were all members of one Service, conditions could be assimilated and all those doing similar duties in the same conditions would be remunerated alike, so that jealousy and many grievances would be eliminated. This argument sounds very plausible, for it is undoubtedly a fact that officers or men in one Service are prone to quote the emoluments—to borrow a word from the jargon of Whitehall received by those of their rank in the others, and to complain of unfair treatment by that comparison. But those who believe that such complaints would disappear in the case of a single Service are undoubtedly over-sanguine. The experience within the separate Services themselves does not support the theory that any substantial measure of simplification in the complex system of pay and allowances in the Services would be obtainable through amalgamation. The system of pay, allowances, pensions, etc., within each of the Services by itself has become so intricate and complex as to be exceedingly difficult of comprehension except by experts in that branch of administration whose duties compel them to devote all their attention to it. Unfavourable comparison between one officer or man and another cannot be avoided within a single service, however great the care taken to ensure justice and fairness between man and man, for no human institution is perfect or infallible. Immense care already is taken in each Service in these matters, the underlying principle being that the basic rate of pay shall be the same for everyone, whatever the branch or trade within the Service to which he belongs, who is of the same rank; and that over and above the basic rate, allowances should be governed by special qualifications attained, or special conditions under

H.M. M.T.B. 459.
(Courtesy of British Power Boat Coy.)



The first men ashore in Normandy. A British Naval Commando. (British official photograph, Crown copyright reserved.)

which service is performed. Moreover, the basic rates of pay, which are the foundation of the whole, are the same, rank for rank, in the three different Services.

These principles sound simple and fair; and though, as far as careful working out can achieve, the system devised on them actually is fair and evenhanded, in practice it is by no means simple. The tools of modern warfare are so complex that officers and men of many new trades are needed to operate them. The Navy of Captain Marryat's time needed, besides the seamen and marines, in each ship no more specialists than the sailmaker and his mate—who were only specially skilled seamen—the blacksmith and his mate, and the carpenter, with a slightly larger crew under him. A century ago, the engine-room staff added a whole new branch, built up from the stoker as the lowest rating, and including the A generation later, the torpedo added a new trade amongst seamen, and introduced new grades of artificer; another generation brought radio and the telegraphist branch; the next, aircraft and the numerous grades of ratings and artificers needed to operate them. present war has brought radar, with a whole new branch for its operation, while the development over the last half-century in the art of fire-control, and of submarine detection in the last half of that period, has still further multiplied the special qualifications needed by a proportion of the seamen. Every development has been in the direction of further subdivision of, and specialisation by officers and men, a process which has inevitably led, in Services hitherto voluntary such as ours have been, to a great multiplication in the different rates of pay and allowances for which officers and men can qualify. It is the same story in both the other Services, though the Army was latest in developing the process of mechanisation which started in the Navy with the introduction of steam propulsion. It is not surprising that the number of different rates at which men serving on the lower deck, or in the ranks, may at one time or another be paid, are said to run into three figures.

On top of the different supplements that may be earned by the officer or man who acquires special qualifications, there are the supplements designed to compensate for disadvantages that flow from particular conditions of service. The naval officer or man who for the time being is compelled to serve in sub-standard conditions of comfort or accommodation is compensated by a payment which used to be known as "hard-lying money"; the Army has its Field Allowance on something of the same principle, as has the Air Force under some other name. Those who are compelled to live in more expensive conditions receive allowances designed to cover the increased expenses that are unavoidable; though it may be noted that these are the cause of many grievances, since the allowances are generally laid down at fixed rates-in accordance with the principles of Government accountancy—while no two sets of special conditions in which Service men may be required to serve are exactly the same. All these differences between man and man in the matter of the conditions of his service, and the actual figure of his weekly emoluments, exist within each Service already; they are facts, of which cognizance must be taken, even by the most logical-minded of theorists; and it is consequently quite fallacious to suppose that any amalgamation, real or merely formal, of the separate Services would abolish them. That argument in favour of amalgamation may consequently be dismissed as of no weight.

The strongest argument against amalgamation, on the other hand, is

that derived from tradition. Officers and men of the Royal Navy, though they do not talk much about it, are immensely proud of belonging to "The Navy, whereon, under the good providence of God, the wealth, safety and, strength of the kingdom do chiefly depend". They are immensely proud of their status as members of the Senior Service, and very jealous of it, though of this too, they make no parade. Naval traditions go back to Drake, a very real figure even to-day in the West Country that has always furnished so large a proportion of naval strength, as are the other great names in our naval history. The seaman of to-day, if he grouses at the rate of pay granted by a niggardly Treasury, remembers that at the time of the Mutiny at Spithead, which arose out of the same cause, it was Lord Howe who took the seamen's part and saw that their just grievances were The seaman of to-day has an immense admiration for the fighting qualities of the British soldier, and there is nothing in his power that he will not do for him—there was never a complaint heard in the destroyers of the Mediterranean Fleet when in 1941 they were called on to go back, time after time without air support, into the hell that the Luftwaffe were creating in the waters round Crete, to make sure as far as was humanly possible that no British soldier should be left behind that could by any means be brought away. But in his heart of hearts, despite his admiration, in a way he looks down on him as really only a poor landsman, dependent in the last resort on the sea service to care for him—an attitude which the soldier to some extent shares, in his confidence in the Navy's capacity to look after him when he has to be afloat, or supplied from the sea. But the sailor's pride is in being of the Navy, to which he owes allegiance, and of the traditions of which he is the guardian; he does not owe allegiance to an abstraction which contains all sorts of other men, not seamen at all, newly invented by some theorist who does not understand the sea or ships, and thinks that there is no difference between a seaman and the landlubbers who depend on him. It is not going to add strength to the Navy or those who compose it to cut them off from the long tradition of which they are the conscious heirs, or to destroy the separate identity of the Service which is their pride; nor is it going to make him do more in the way of co-operation with the other Services than he has done in all the wars of our history.

It is the same thing in the Army, of which the great strength lies in regimental tradition, embodied in the battle honours borne by the Regimental colours. No good could possibly come of a clean break with those traditions; yet there can be no real amalgamation of the Services otherwise. For if regimental traditions are to be retained in the infantry units of the new integrated Service, or whatever it is to be called, they can be nothing but the old Regiments under another name, though no longer allowed to be parts of the Army to which they were proud to belong. If amalgamation were to be real, and not a mere paper abstraction without practical effect, tradition and esprit de corps must go. We should have to be very sure that the change was going to create a more efficient fighting organisation before that loss could be accepted.

The Royal Air Force's traditions do not go back as far as those of the Navy or Army—naturally enough, since it was only created in 1917. But they are very real and individual, none the less, and much value is attached to them within the Service. They, too, would have to go in amalgamation, and formations formerly of the R.A.F. could not even absorb the traditions of the older Services in that process, for they would have disappeared too.

The conclusion that emerges from these considerations is that a real amalgamation of the three fighting Services into one is neither a practicable proposition, nor is it necessary in order to ensure that, in future, the full and cordial collaboration that was achieved by the forces under General Eisenhower shall always be forthcoming. Unity of effort and direction, and full collaboration of all arms to the same end, can already be achieved, once the paramount necessity for achieving them is recognised, and kept firmly in view, in all the Services; and once the mischief-makers, intent on stirring up jealousy between the Services, and keeping it alive by continual exaltation of one and depreciation of the others, are exposed and suppressed. It is perhaps unfortunately true that we are unlikely ever to be free from some of that kidney, even in high and influential positions. But in spite of them, in the present war the Services themselves have broken away from the attitude they maintain, and have achieved full collaboration in the face of the enemy. They have done it once, and they can do it again, provided we do not, at the bidding of visionary theorists, scrap well-tried institutions in favour of a brand-new product of the armchair planner's brain.

H. G. T.

CHAPTER II.

A NAVAL CHRONICLE.

JANUARY.

The year 1944, which was to prove so momentous in the Allies' advance towards victory, began well with a steady improvement in the results of the anti-U-boat war and in the reduction of shipping losses. This, as will be seen, was to have a vital bearing on the success of major enterprises in the months to come.

A joint statement, issued monthly under the authority of the Prime Minister and the President of the United States, and referring to the situation in January, was as follows: "1944 was opened with a very satisfactory first month for the Allies in their continued campaign against In spite of the limited opportunities to attack U-boats the U-boat. owing to the extreme caution now exercised by them, more were destroyed in January than in December. This has been accomplished by unrelenting offensive action by our surface and air forces. The amount of merchant ship tonnage sunk by U-boats during January, 1944, is among the lowest monthly figures for the whole war. German claims should, as usual, be ignored as they are grossly exaggerated and issued purely for propaganda purposes." It is interesting to compare this record of facts with Admiral Doenitz's declaration, which he made just a year before on becoming Commander-in-Chief, that "The entire resources of the German Navy will henceforth be put into the service of inexorable U-boat warfare."

Something of the nature of this warfare was described in an account, given in a joint communiqué issued by the Admiralty and Air Ministry on January 22, of a four-day attack made some weeks earlier on an important Atlantic convoy. The convoy, northward bound for Britain, was sighted by enemy aircraft when about 250 miles W.S.W. of Cape St. Vincent. The statement continued, "... action was first joined ... in a position about midway between the Azores and the Portuguese coast. attacks were carried out by day and night on U-boats sighted at different intervals over four days by British and Canadian warships, and by British and Canadian Coastal Command squadrons, and U.S. aircraft based on Gibraltar, the Azores and the British Isles. The warships taking part, under the command of Captain L. F. Durnford-Slater, R.N., were the A.A. cruiser H.M.C.S. Prince Robert, H.M. sloops Chanticleer, Crane, and Pheasant, H.M. frigates Exe, Nene, Essington, and Foley, and the Canadian corvettes Calgary and Snowberry".

"The attack," said the statement, "marked the first change in enemy tactics for over a year—a reversion to concentrated long-range bombing, the Germans using He. 177's (their new long-range heavy bombers) equipped with radio-controlled glider bombs, and F.W. 200 (4-engined) bombers carrying ordinary bombs; these tactics were a failure, only two ships in convoy being damaged." In the course of the engagement one U-boat was destroyed; one probably destroyed; several damaged; and several aircraft were shot down and damaged. Several enemy survivors were picked up. All efforts to launch a concentrated attack were completely frustrated.

A special tribute was paid by the First Lord of the Admiralty, Mr. Alexander, to Canada's part in the anti-submarine campaign. In a statement on the work of the Royal Canadian Navy, which he made on January 19, he referred to the fact that it provided over two-fifths of the ocean-going escorts in the North Atlantic. He added that, of the Coastal Command operations against the U-boats, approximately one quarter was undertaken by Canadian naval aircraft; by agreement between the U.K., the U.S.A. and Canada, the R.N. and R.C.N. were mainly responsible for the control and protection of trade convoys between Britain and the North-West Atlantic ports.

Early in the month it was announced in Ottawa that Vice-Admiral Percy W. Nelles, Chief of Staff of the R.C.N., had been appointed Senior Flag Officer of that Service, Oversea, with headquarters in London. He was succeeded as Chief of Staff by Rear-Admiral G. C. Jones, R.C.N.

A flagrant example of German savagery occurred on January 24, when the British hospital ship St. David, of 2,700 tons, was deliberately bombed and sunk at night by enemy aircraft although brilliantly lit up to show her Red Cross marking. Some survivors were picked up, but the loss of life among the wounded, who were being brought away from the Anzio beachhead, and the hospital staff was increased by the ship being bombed a second time from a low level while she was sinking. Two other hospital ships—the Leinster (4,300 tons) and the St. Andrew (2,700 tons)—were also attacked, the former being slightly damaged.

By contrast with this gross violation of international conventions was the correct attitude of the Eire Government in dealing with 164 German naval personnel picked up by the Irish s.s. Kerlogue and landed at Queenstown. These men were understood to be survivors of the German blockade runner sunk in the Bay of Biscay on December 27. A German claim that they should be repatriated on the grounds that they were "shipwrecked mariners" and should not be treated as belligerents was

rejected, and they were interned.

From time to time, as British submarines returned to their home ports from service overseas, the Admiralty published short accounts of some of their achievements. Among these was a description of one of the strangest "bags" recorded in submarine history, made by H.M.S. Unrivalled (Lieutenant H. B. Turner, D.S.C., R.N.). After the Italian surrender she entered the port of Bari and, as a result of negotiations between her commanding officer and the local Italian Admiral, left with eight of their merchant ships. These she shepherded to Malta, where, despite enemy air attacks, they all arrived four days later. Another incident, with a less fortunate result, was her encounter off the Lipari Islands with two Italian ships, which she sank, only to learn too late from prisoners that they had carried to the bottom £18,000 in lire—the pay for a minesweeping flotilla.

Another fine record of many and varied achievements was that of the submarine Rorqual, whose safe return from the Mediterranean to a home base was made known early in the month. In the course of her service in those waters she laid 1,200 mines on the enemy supply routes; sank by torpedo and gunfire 40,000 tons of enemy shipping and a U-boat; bombarded shore targets; carried food, ammunition and petrol to the garrison defending Leros; and played a valuable part in the defence of Malta by making three trips to the island during the siege with vital supplies.

It was not until her return home in January that the name was released of the submarine which landed (and safely re-embarked) Lieut.-General Mark Clark and other U.S. officers and civilian representatives for their secret meeting with French patriots on the Algerian coast before the invasion of North Africa. This was the Seraph—one of the "Sea Lion" class—commanded by Lieutenant N. L. A. Jewell, R.N. Another dramatic incident in which the Seraph took part was the escape from France of General Giraud. He embarked in the submarine on the French coast and was taken to the middle of the Mediterranean, where he re-embarked in a flying-boat which took him to General Eisenhower's G.H.Q. The Seraph was also credited with sinking over 7,000 tons of enemy shipping and damaging another 10,000 tons. She played an important part during the Sicilian landings.

Tribute is rightly paid to the bravery which has been displayed on innumerable occasions by ships of the Merchant Navy in encounters with the enemy. But it is not always realised how great has been the part played by vessels belonging to some of the smaller allies. An epic, comparable to that of the Rawalpindi or the Jervis Bay, was the story of the Norwegian cargo steamer Borgestad. Although it happened three years previously, it was only made known this month that this little merchant ship was leading an important convoy in the South Atlantic, when the German cruiser Admiral Hipper was seen approaching. The Borgestad deliberately sacrificed herself to enable the other ships to escape. Heading straight for the German warship, she fired her light guns to the last and went down with all hands. Her master, Lars Groetnaes, was posthumously awarded the highest Norwegian decoration—the War Cross.

In a review of the work of the Dutch navy during the previous year, it was mentioned that the R.N.N. had been actively engaged in the Mediterranean—including the Sicily and Salerno landings; the S.W. Pacific; the English Channel; the Caribbean; and on convoy duty. Dutch submarines had sunk 35,000 tons of enemy shipping and an Italian submarine.

On January 26 the Minister of Economic Warfare, Lord Selborne, made an important statement on the effects of the blockade up to date. He described it as an instrument slow in starting, but which was now playing an increasingly important part. Enemy ships, he stated, were lying in Bay of Biscay ports with machine tools, tanks, special components, etc., sorely needed by Japan, but which, due to damage caused them by Allied bombing attacks, could not sail. He also reported that Germany had lost three-quarters of the cargoes from Japan which had attempted to get through during the last blockade-running season. These included rubber, tin, tungsten, quinine, opium and guns, which, with other vital commodities, she was finding increasing difficulty in procuring from outside countries, even contiguous neighbours. Neutrals had cut down their export quota, and in occupied countries important sources of supply had been sabotaged.

HOME WATERS.

Wintry weather limited naval operations in home waters, but air attacks were directed against enemy naval targets as opportunity offered. On January 4 and 5, the U-boat yards at Kiel were bombed by U.S. and British aircraft.

On January 26, a Coastal Command force consisting of British and

Canadian Beaufighters attacked enemy shipping in Norwegian waters. Three merchant vessels and two escort craft were hit with torpedoes. The ships used a new type of projectile from their A.A. armament. This, it was stated, was of the rocket type and "opened out in the air and had a canister attached by cable to a parachute."

Air Ministry reports continued to mention minelaying in enemy waters by our aircraft—a method of attacking shipping which had become

well established on both sides in this war.

Coastal batteries in the Dover area scored a success early in the morning of January 20, when they hit a large enemy vessel off Cap Gris Nez. Reconnaissance later reported only her funnels and superstructure showing above water. The Prime Minister sent a message to the Commander of Coastal Artillery, East Kent District, on the good shooting of his guns. The enemy responded forcefully from the other side of the Strait, and from 5 to 8 a.m. there was an intensive duel by long-range artillery.

THE BALTIC.

The course of the war had limited the field of activity of the Red Fleet; but signs of returning life were seen when ships of the Baltic squadron joined with the guns of Kronstadt in the great artillery barrage which preceded the Russian offensive on the Leningrad front which opened on January 15.

One of the ships which took part in these operations was the 10,000-ton cruiser Petropavlovsk. Formerly the Lutzow, she was built at Bremen for the German navy, but presented by Hitler to the Soviet Government in 1940, when he was still in a conciliatory mood towards Russia.

MEDITERRANEAN.

The chief event of the month in the Mediterranean was the landing of a large force behind the enemy's flank on the west coast of Italy.

On the nights of January 18-19 and 19-20, British cruisers and destroyers carried out intensive bombardments of shore targets in support of the offensive by the sea flank of the Fifth Army. This, no doubt, was all part of a diversion to draw enemy reinforcements south and away from

the locality where the landing was to be made.

Early on the morning of January 22 a great fleet of transports and landing craft, escorted by strong British, American, Greek, French, and Dutch naval forces, under the command of Rear-Admiral Lowry, U.S.N., the British being commanded by Rear-Admiral Troubridge, arrived off the coast at a point about 30 miles south of Rome and in the vicinity of Capo Anzio. The initial landings were made at 2 a.m. with sea and air support, stated officially to have been on a scale comparable to that at Salerno. The enemy was taken completely by surprise, and for two hours there was no resistance; the Luftwaffe did not appear for seven hours. The official communiqué issued at midday said that British and American troops of Lieut.-General Clark's Fifth Army had landed "deep in the rear of the present front line enemy positions." The troops went ashore from landing craft on a beach several miles long from north to south. Some places were found to be heavily mined; others were quite clear. nightfall the foothold was securely, and, as it subsequently proved, finally in Allied hands and an advance had been made inland. A stream of reinforcements, tanks, guns, and supplies of all sorts was being landed. Enemy

aircraft attempting to interfere with the disembarkation were engaged

by a much superior Allied air force.

By January 26, the foothold was reported to be already the size of the Isle of Wight, and constant reinforcements continued to land under strong naval and air cover. H.M. cruisers Mauritius and Dido and the destroyer Kempenfelt were mentioned as among the British warships which, on January 28, gave powerful support to the Fifth Army between Garigliano and Nettuno by silencing shore batteries, breaking up enemy troop movements on the roads, damaging transport, cutting a supply train in half with a direct hit, and bombarding Formia. Among the ships which supported operations south of Rome and which, on the last day of the month, again bombarded Formia and other enemy positions on the Gulf of Gaeta, was the cruiser Penelope.

In the Adriatic, H.M. destroyers Janus, Jervis, Tumult, Troubridge, and Tyrian carried out a series of bombardments on the nights of January 7, 8, and 9, of the coastal railway in the vicinity of Ancona, San Benedetto, and Civitanova, damaging trains and dislocating traffic; three enemy schooners were sunk and five others left abandoned and sinking during these operations. The fire of shore batteries was ineffective and our ships

suffered no injuries.

On January 9, the important naval base and harbour of Pola was

bombed by U.S. aircraft. Ancona was also bombed.

In the middle of the month naval operations in the Tyrrhenian and Adriatic for a period of a week included the bombarding of Rorigno by H.M. destroyers Grenville and Tyrian; of Durazzo by the Blackmore and Ledbury; and of Dalmatian ports by the Tumult and Troubridge. British coastal forces torpedoed a small enemy ship in the harbour of Sumartin (Brac), and U.S. coastal forces attacked lighters off Spezia.

Submarines continued their activities in the Mediterranean, and on January 6 the Admiralty announced that those under the command of Lieutenants M. F. R. Ainslie, D. Lambert, G. E. Hunt, R. Boyd, L. E. Herrick, C. Gordon, and J. P. Fyfe respectively, had sunk eight enemy vessels off the French Riviera and in the Ægean; these included a large tanker, a naval auxiliary vessel and six supply ships.

MALACCA STRAITS.

It was made known on January 21 that a British submarine commanded by Lieutenant-Commander Bennington had sunk a 5,000-ton Japanese cruiser of the "Kuma" class in the northern approaches to the Malacca Straits; also three large supply ships.

PACIFIC.

The war in the Pacific started the year 1944 with a successful combined operation against the harbour and airfield of Saidor, on the north coast of the Huon Peninsula. Under cover of a bombardment by U.S. and Australian warships and an air bombardment, troops of the U.S. Sixth Army got ashore with very light casualties and quickly seized their objectives. This force at once constituted a serious threat to the enemy base at Madang, 55 miles to the north-west, while it completely cut off the Japanese between Saidor and the Australians advancing on the Peninsula. By January 9, the enemy was making desperate efforts to withdraw his trapped forces by sea, and that night Allied torpedo craft sank eleven barges (seven carrying troops and supplies) off Saidor, while Allied

destroyers shelled Japanese bivouac areas and barge concentrations at Gali, 11 miles to the south-east. By the end of the month, the Australians had made good progress along the Peninsula and were within 30 miles of the American position at Saidor. Many Japanese troops cornered in this coastal pocket had died from starvation and exhaustion and others had been drowned when the barges in which they were trying to escape were sunk.

The Japanese fleet showed no signs of resisting the Allies' infiltration of occupied territories, and gave few chances for attack; but on January 1 U.S. carrier-borne aircraft made a concentrated attack on four enemy warships entering Kavieng harbour (New Ireland). A cruiser was hit by three heavy bombs and a torpedo, and a second one by two bombs and two torpedoes; both ships, it was believed, were either sunk or beached. Two destroyers were believed to be at least severely damaged. This attack, which was supported by a group of battleships, was intercepted by twenty to thirty enemy aircraft, eleven of which were shot down. The American losses were two fighters and one bomber.

On January 80, began what was described by Admiral King—Commander-in-Chief, U.S. Fleet, and Chief of Naval Operations—as "offensive operations on the largest scale yet undertaken" against the Marshall Islands. The task forces concerned were under the command of Vice-Admiral (now Admiral) Spruance. Carrier-borne aircraft simultaneously attacked the atolls—Kwajalein, Roi, Taroa, and Wotje; the two latter were also bombarded by cruisers. All four islands together with Mille and Jaluit were also bombed by shore-based aircraft. Next day an attack group, under Rear-Admiral Hill, closed the atoll of Majuro and found that there were no Japanese there and so the way was clear for a landing on the morrow.

It had become clear that these operations against New Guinea and the Marshalls were not merely a process of "island hopping," but part of a great strategical plan aimed primarily at cutting deeply into the enemy's sea communications with his many distant garrisons, and ultimately at

South-East China and the heart of Japan itself.

On January 31, the U.S. Navy Department announced that since the attack on Pearl Harbour (December 7, 1941) American submarines operating in the Pacific and Far East had sunk or damaged 572 Japanese ships; of these 422 were positively sunk, 36 probably sunk, and 114 damaged.

LOSSES.

Allied warships, the loss of which was reported during the month, were:—

British—Destroyers Hurricane, Tynedale, and Holcombe. Minesweeper Felixstowe.

U.S.A.—Destroyer Turner. This vessel blew up off Sandy Hook.

FEBRUARY.

The Anglo-American Joint Statement on the war against U-boats during February was as follows: "In spite of the increase in traffic of the United Nations' shipping in the Atlantic, February, 1944, was the lowest month as to tonnage of Allied merchant shipping losses by enemy U-boat action since the U.S.A. entered the war, and was the second lowest

month of the war. Again there were more U-boats than merchant vessels sunk, so the exchange rate remains favourable to the United Nations. In actual numbers a few more U-boats were sunk in February than in January."

An example of the successful combination of different means employed to counter U-boats was seen in a communiqué issued jointly by the Admiralty and Air Ministry on February 20, describing intermittent engagements extending over eleven days and nights against a number of enemy submarines operating in the Strait of Gibraltar. The U-boats were trying to pass through the Strait into the Mediterranean when, as a result of the combined operations by H.M. ships and Coastal Command aircraft, two were sunk. A number of survivors were picked up. While these operations were in progress, three large Allied convoys passed through the Strait without interference.

Allied submarines continued to take toll of enemy shipping all over the world, and in a statement issued by the Admiralty on February 19, credit was given to Lieutenant-Commanders Wingfield and Favell, and Lieutenants Turner, Drummond, Duff, Gatehouse, Weston, Pelly, Fyfe, and Piper for sinking 19 enemy ships ranging from the largest type of supply vessel to coastal craft, probably sinking 6 more, and damaging 8 others during recent operations in the Arctic, Atlantic, Mediterranean, Indian Ocean, and Far East.

Another example of individual achievement was that of the submarine Unseen (Lieutenant M. L. C. Crawford, R.N.), which returned to her home base during this month after sixteen months in the Mediterranean. During that time she covered 23,000 miles and sank or damaged some 20,000 tons of enemy shipping, including ten transports. On one occasion, in order to evade enemy destroyers, she had to crash dive and got to a depth which was 145 feet below the maximum for which she was designed. It was evidence of her stout construction that she suffered no damage thereby.

On February 2, the appointments were announced of Vice-Admiral Sir Algernon H. Willis, K.C.B., D.S.O., to be Second Sea Lord in succession to Admiral Sir William J. Whitworth, K.C.B., D.S.O., and of Rear-Admiral C. H. J. Harcourt, C.B., C.B.E., to be Naval Secretary to the First Lord. An important appointment, announced by the U.S. Navy Department

An important appointment, announced by the U.S. Navy Department on February 20, was that of Admiral Harold R. Stark as Commander of all U.S. Naval Forces in the United Kingdom Area. At the same time it was made known that Rear-Admiral Alan G. Kirk had been appointed Commander of the U.S. Task Force operating as part of the Combined Nava Forces based on Britain.

In paying a tribute to the Polish Navy, the First Lord said that it was now 135 per cent. above its pre-war strength and comprised a cruiser, six destroyers, two submarines, and three motor-gunboats. It had sunk, amongst various enemy ships, 2 destroyers, 6-8 submarines, an auxiliary cruiser, and 35 transports. The Polish submarines, he said, had been particularly successful in the Mediterranean. It was officially stated on February 16 that all the surrendered Italian warships that could usefully be employed were taking part in appropriate theatres of war, manned by Italian crews.

It was established by air reconnaissance towards the end of the month that the German battleship Gneisenau, still lying at Gdynia, was partly dismantled and that no attempt had been made in the previous eighteen months to repair the serious damage she had received in her dash with the Scharnhorst from Brest to the Heligoland Bight and subsequent bombing at Kiel.

HOME WATERS.

Activities in home waters were confined mainly to engagements between British Coastal Forces—motor torpedo boats and motor gunboats—and enemy light forces or convoys trying to creep from port to port in occupied territory, especially by night. In the early morning of February 5, a coastal force under Commander B. J. de St. Croix, R.N., engaged an enemy force which included a destroyer of the "Elbing" class and several minesweepers, off Ile Vierge (north-west French coast). The destroyer was hit several times but escaped under cover of a smoke screen; one minesweeper was set on fire and another damaged. No British ship was damaged. Next day Coastal Forces, operating off the approaches to Sogne Fjord (50 miles north of Bergen), disabled an enemy patrol vessel. There was a small number of British casualties.

On February 13, light forces torpedoed and sank two enemy supply ships. According to the German report, they were "harmless coastal passenger ships"; this was hardly consistent with their having a naval escort and exploding with such violence as to indicate that they were full of ammunition. The following night, in an engagement between light forces off the Dutch coast, an enemy A.A. ship was hit by two torpedoes and severely damaged and an armed trawler set on fire; later, in a close action with E-boats, one was left ablaze and four others were severely damaged. The British craft sustained superficial damage and a small number of casualties. In the early hours of February 23, E-boats made a determined attack on a small British convoy off the East Coast. H.M. destroyer Garth blew up one of the enemy and the remainder withdrew when attacked by light forces. Neither H.M. ships nor the convoy were damaged.

ATLANTIC.

On the night of February 12-13, a valuable convoy was attacked by seven He. 177's and F.W. 200's when 380 miles west of Cape Finisterre. They were engaged by four Wildcats from H.M. Escort Carrier Pursuer, which shot down two and put the rest to flight before they could do any damage. The naval aircraft returned safely to their carrier. On February 16, it was reported that a Ju. 290 carrying a glider bomb had attempted an attack on a North Atlantic convoy, but had been intercepted and shot down by two Wildcats from the escort carrier Biter. A second and similar attack on the convoy was frustrated by a Beaufighter of Coastal Command.

How far afield U-boats were operating was shown by the announcement that U.S. aircraft had sunk two in the South Atlantic; one of them was reported to have blown up after a direct hit when off Ascension Island.

MEDITERRANEAN.

Naval activities in the Mediterranean during the month centred in the combined efforts to consolidate the position of the Allied armies on the Anzio-Nettuno beach. This gave rise to some anxiety at one period, especially in the United States, where the Under-Secretary for War, Mr. Roger Patterson, gave a caution on February 10 that the danger to the British and American troops "must not be minimised." The next day Mr. Roosevelt referred to the situation there as "very tense"; but remarked that the Allies had sea and air superiority and were "praying for good weather to enable that superiority to be felt." It was in this bad weather and when the enemy was attacking in reinforced strength, that the warships were able to give proof of the value of naval gunfire for such operations. On the very day of the President's remarks, when both the Allied air forces and the Luftwaffe were grounded, the Allied ships were able to give "strong support to ground forces in the Anzio bridgehead." Notable among the ships taking part were the British cruisers Dido and Mauritius. Parallel with the fierce fighting to hold the Anzio position, there was great activity on the sea flank of the main front, and here too the Allied ships were frequently engaged, especially in the Gulf of Formia.

On the night of February 20-21, E-boats attempted to approach Anzio, but were driven off, one being sunk by American light craft.

After bad weather had again held up fighting from February 26 to 28, the enemy launched his third offensive on the bridgehead at dawn on February 29. On that day it was made known that the new British cruiser Spartan had been sunk off Nettuno.

During the month British destroyers and light forces were active in the Adriatic.

PACIFIC.

The combined operation against the Huon Peninsula (New Guinea) terminated successfully on February 11, when the U.S. forces and the Australians having made contact, the whole Peninsula was reported clear of the enemy.

Operations against the Marshall Islands were continued vigorously. Intensive naval bombardments and bombing of the Kwajalein group of islets during the first three days of the month resulted in nearly the whole group being occupied, with no losses to the ships and only moderate casualties to the landing parties, by February 4, when most of the Task Force and troopships anchored in Kwajalein Lagoon—a sixty-mile sheet of water with natural protection against submarine attack. The remnant of the Japanese garrison, trapped in the north-east of the main island, was eliminated after a night bombardment on February 6 by American warships and artillery. This victory gave the U.S.A. the most important base in the Marshalls.

Attention was next turned to Eniwetok atoll which, on February 10, 11 and 12, was bombed by carrier-borne aircraft. This continued intermittently until, on February 18, they were reinforced by a bombardment by warships to cover a landing. Within six hours the chief island of Engebi was occupied. By February 20 the whole atoll was in American hands. With this the control of the Marshall Islands—Japanese possessions before the war—passed to the United States. Reporting on this achievement, the Chief of Naval Operations wrote that it was "characterised by excellent planning and by almost perfect timing"... it was "a credit to all who participated, and is a noteworthy example of the results that may be expected from good staff work."

At dusk on February 14 American and New Zealand troops, under cover of strong naval and air protection, landed on the Green Islands at the north extremity of the Solomons Group and occupied them against negligible resistance. General MacArthur's communiqué remarked, "For all strategic military purposes this concludes the campaign for the Solomons."

An attack, which was officially reported to have been "so devastating in its effect" that "it was generally regarded as partial payment for the debt incurred when Pearl Harbour was attacked," was made on the Japanese naval base in Truk Island on February 16–17. It opened with bombing by carrier-borne aircraft, which was "followed up by battleships, cruisers and destroyers." According to Admiral Nimitz's communiqué, the "carrier strike" accounted for 201 enemy aircraft, 127 destroyed in combat, the rest on the ground; the sinking of 2 Japanese light cruisers, 3 destroyers, 1 ammunition ship, 1 seaplane tender, 2 gun-boats, and 10 supply ships; and the probable sinking of another cruiser or large destroyer and 6 more supply ships. Later photographic reconnaissance showed 23 ships sunk, 6 probably sunk, and 11 damaged. The U.S. losses were 17 aircraft, and one warship sustained moderate damage. The initial approach to Truk was undetected, and on the second day there was no enemy air opposition. Admiral Spruance, U.S.N., was in command of the whole force, and Rear-Admiral Mark A. Mitscher of the carrier attack.

The first attack on the Mariana Islands was made by Rear-Admiral Mitscher's carrier force on February 22, when a large number of naval aircraft bombed Saipan and Tinian. Few enemy warships were found there, but several cargo vessels were sunk or damaged. Some 30 enemy aircraft were shot down and 85 or more destroyed on the ground. At the same time a smaller force raided Guam. In spite of the fact that the American force was sighted by enemy reconnaissance aeroplanes and attacked by bombers and torpedo aircraft during the night of the approach, no U.S. warships were sunk or damaged, and only 6 aircraft were lost.

Having occupied the Solomons, the Allies' next objectives in that quarter were naturally the New Britain and New Ireland Islands. This offensive opened with attacks by bombers on the respective capitals of Rabaul and Kavieng during the last days of the month; in the latter these were reinforced on February 25 by U.S. destroyers which "poured hundreds of shells into the waterfront installations" without opposition.

At dawn on the last day of the month, after a preliminary bombardment by U.S. destroyers at short range and under cover of strong air and naval support, American forces landed on Los Negros (Admiralty Islands). Suffering negligible casualties, they established a 5,000-yard foothold and captured Momote airfield. This operation, it was stated in the Allied communiqué, marked "the final stage in the great swinging move pivoted on New Guinea, which has been the basic purpose of operations initiated on June 29, 1943. . . ." "The axis of the advance," it was explained, "has thereby been changed from north to west which relieves our supply line of the constant threat of flank attack. . . ." By this time some 100,000 Japanese troops were isolated in the Bismarck—Solomons area, with their supply lines severed save, perhaps, for precarious blockade-running by submarine or an individual surface ship. "Their ultimate fate," said the communiqué, "is certain under blockade, bombardment and the increasing pressure of our besieging ground forces."

Numerous attacks were made on Japanese ships in convoy, especially during the latter part of the month. Particularly successful was that made by Allied bombers on February 15-16 against a convoy off the north-west of New Ireland heading for the Bismarck Archipelago; this

was practically wiped out. The enemy's losses included 2 tankers of 7,500-8,000 tons, a 6,000-ton transport, 9 smaller cargo vessels, a destroyer, and 2 corvettes. All the crews and other personnel were believed to have been drowned. Other successful attacks on enemy shipping and its escorts were made by bombers on February 21, north-west of Cape Matanalem (New Hanover), and on February 22 when American destroyers made an extensive sweep through the waters to the north of the Bismarck Archipelago.

On the last day of the month, Colonel Knox, when announcing that U.S. submarines had sunk 14 more Japanese merchant ships, stated that this brought the total sunk by American under-water craft up to 611, and

to well over 3,000,000 tons sunk from all causes.

LOSSES.

The loss of the following Allied warships was reported during the month of February:—

British—Cruiser Spartan. Destroyers Janus, Hardy, and Warwick. Submarine Simoon. Frigate Tweed.

United States—Submarine Rescue Ship Macaw. Submarines Cisco and S.44.

MARCH.

In a broadcast speech on the war situation which the Prime Minister made on March 26, he said, "We who dwell in the British Isles must celebrate with joy and thanksgiving our deliverance from the mortal U-boat peril. When I look back upon the fifty-five months of this hard and obstinate war... I still rate highest among the dangers we have overcome the U-boat attacks upon our shipping..." He added, "But there are other deliverances we should never forget. There was the seamining peril, which loomed so large in 1939, and which has been mastered by superior science and ingenuity, and by the often forgotten but almost unsurpassed devotion to duty of our minesweeper crews and the thousands of ships they work and man..."

The monthly joint statement on the anti-U-boat war said "March was an active month. . . . U-boats . . . operated in widely dispersed areas from the Barents Sea to the Indian Ocean. The enemy has persevered vainly in strenuous efforts to disrupt our flow of supplies to Russia by the northern route. Our merchant shipping losses were mainly incurred in far distant seas; though a little higher than in February, they were still

low and the rate of sinking U-boats was fully maintained."

Colonel Knox, U.S. Navy Secretary, announced on March 21 the names of 88 escort carriers of about 10,000 tons displacement which had

been transferred to the Royal Navy.

An account of the remarkable adventures of H.M. Submarine Stubborn (Lieutenant A. A. Duff, D.S.C., R.N.) was published by the Admiralty on March 12. After making successful attacks on two convoys off the Norwegian coast, her diving planes jammed as the result of the enemy's depth charges; she got out of control and dived to twice the depth for which she had been tested. She was kept from sinking deeper and from surfacing among her attackers by using the crew as balance-weights. Nevertheless, she eventually shot up, but dived again—this time striking the bottom, where she remained helpless. Eventually her commanding officer ran his main compressor, drawing air from inside the submarine,

until a pressure of 3,000 lb. per sq. in. was obtained, when she came off the sea-bed at an angle of 70°. By now friendly destroyers had arrived on the scene, and she was towed out of the danger zone. But the tow parted in a gale and she had to struggle on for 300 miles before she could be taken in tow again and brought to safety. There were no casualties.

According to an announcement by the Japanese Imperial G.H.Q. (which was not made until May 5), the Commander-in-Chief of the Japanese navy—Admiral Mineichi Koga, was killed in March "while directing operations in an aeroplane at the front." It is remarkable that an almost identical statement on May 21, 1943, made known the death of Admiral Koga's predecessor—Admiral Yamamoto. The new C.-in-C. was Admiral Soemu Toyoda, who had previously commanded the Yokosuka Naval Station (not to be confused with an officer of the same surname who was formerly naval attaché in London).

HOME WATERS.

British light coastal forces were active against enemy E- and R-boats and convoys, especially off the Dutch coast, on March 5, 7, 10 and 29. On March 14 and 15, attacks were made on supply ships and their escorts entering the Dover Strait at night; a few casualties were inflicted on the enemy; but, for the most part, these encounters did not yield very striking results. Good co-operation between Coastal Command and light coastal forces on the night of March 15 brought about a lively engagement 25 miles south-west of Lands End in which the latter, having been guided to the spot by the patrolling aircraft, sank one E-boat, severely damaged two more, and damaged others before the enemy made off at high speed. The British sea and air forces returned without damage or casualties.

ATLANTIC.

An account of the exploits of the 2nd Escort Group was given by the Admiralty on the ships' return to Liverpool on March 19. Under the command of Captain F. J. Walker, C.B., D.S.O., R.N., in H.M. sloop Starling, the Group had destroyed six U-boats in operations in the Atlantic extending over 20 days. Contact was first made with the enemy 300 miles south-west of Ireland, and the ensuing actions were widely separated. Other ships which took part were the sloops Wild Goose, Magpie, Woodpecker, and Kite. Over 300 Germans were killed or made prisoners; the complete crew of 51 from one U-boat were brought in. Not a single ship in the convoy which was being protected was lost, nor was there a single British casualty. H.M.S. Woodpecker, however, was torpedoed, and, after being in tow for eight days, foundered, her crew having been transferred to other vessels. Captain Walker said that the Wild Goose should be given the chief credit for having detected 4 of the U-boats and for having played a major part in their destruction; she had sunk 7 U-boats since commissioning. The 2nd Escort Group received a warm welcome on returning to their base, where they were addressed by the First Mr. Alexander described Captain Walker as "England's leading anti-submarine ace," and said that he had 17 U-boats to his credit.

In an encounter between the 1st Escort Group consisting of H.M. frigates Affleck, Gore, Gould, and Garlies, under Commander C. Gwinner, D.S.O., R.N., which took place later in the month, two U-boats were sunk by depth charges and gunfire. Seventeen survivors were rescued. In the course of the action the Gould was sunk.

The Norwegian government stated that their submarine Ula, in the course of nine months operational service, had sunk 25,000 tons of enemy

shipping and damaged other vessels.

An example of the check exercised on neutrals to prevent their carrying contraband was seen when a British patrol vessel seized the Spanish s.s. Segundo Efigenia while on passage from Ceuta to Larache (Spanish Morocco). By decision of the Gibraltar Supreme Court her cargo of tins and metal lids was seized on the grounds that they were intended to be used for exporting canned fish to enemy-occupied territory.

MEDITERRANEAN.

The first half of the month the weather was so bad that it interfered seriously with operations in Italy; nevertheless, supplies continued to be landed at Anzio whenever possible, despite enemy air attacks and long-range shelling. On March 3, it was reported that H.M.S. Mauritius had carried out nine successful bombardments against the enemy facing the Allied position. On March 7, the loss was reported off Anzio of the cruiser Penelope.

A Turkish merchant ship of 3,859 tons, the s.s. Krom, was torpedoed and sunk in territorial waters between Rhodes and Marmarice on March 30 by an unidentified submarine. The Turkish government was informed by the British Naval Attaché that no British submarine was in the vicinity

at the time.

PACIFIC.

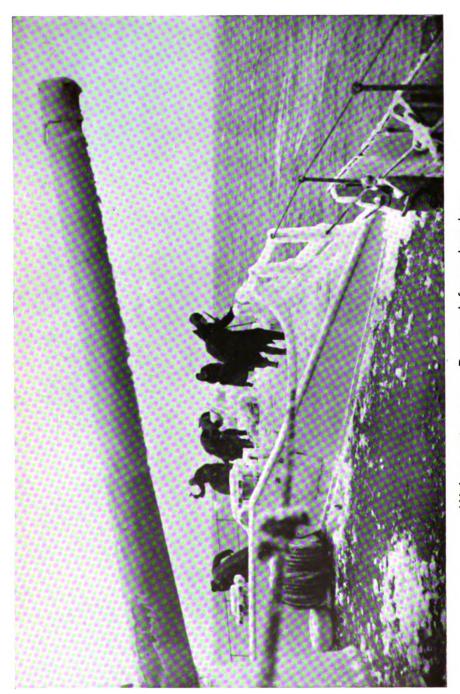
At dusk on March 3, the Japanese in Los Negros (Admiralty Islands) made a determined attempt to recapture the airfield at Momote, which had been taken in the American landing on February 29. Allied destroyers, in an inshore sweep, bombarded enemy positions in the vicinity and assisted in checking and defeating an assault carried out, according to the communiqué, "with desperate fanaticism." On the same day, Allied destroyers also bombarded Rabaul harbour, sinking several small ships and barges, some carrying troops. Further progress was made in the occupation of the Admiralty Islands group when, on March 15, following on a preliminary naval and air bombardment, the Americans established a foothold on Manus Island. The following day they captured the Lorengau airfield on the island. This, with the Momote airfield, provided the Allies with bases for strong air forces which could command the enemy's sea communications with New Britain and New Ireland.

A significant broadcast from Tokio, on March 7, admitted that it was "virtually impossible to send ships on any large scale to the South Pacific," and that "huge enemy task forces ply between our supply bases and the front lines"; and further, "the passage of larger transports is infinitely difficult." This reference to the influence of American naval forces on the whole strategical situation was emphasised when, on March 30, U.S. battleships and carrier-borne aircraft bombarded and bombed the Palau Islands, 2,100 miles west of the Marshalls and 400 miles east of Mindanao (Philippines). This was the deepest penetration made into enemy waters up to that date, and although there was no attempt at a landing, enemy ships were observed fleeing from what was suspected of being an important stronghold of the Japanese Fleet.

Reviewing the achievements of U.S. submarines, earlier in the month, Admiral Nimitz said that they had sunk so many tankers and supply



Royal Marines landing at Walcheren. (British official photograph. Crown copyright reserved.)



With an arctic convoy. Destroyer's forecastle at dawn. (British official photograph. Crown copyright reserved.)

ships that the enemy had probably found it very difficult to keep his main fleet at Truk, where the U.S. Fleet had been disappointed in finding no

major Japanese ships.

H.M. submarines were also active in the Far East. On March 2, the Admiralty made known that submarines under the command of Lieutenant-Commander R. M. Favell, and Lieutenants D. S. McN. Verschoyle-Campbell, D.S.C., and D. J. Beckley, D.S.O., R.N., had torpedoed and probably sunk a 7,000-ton Japanese aircraft carrier in the northern approaches to Malacca Strait, torpedoed a cruiser and sunk 2 supply ships by gunfire and torpedo. It was not possible to ascertain definitely the destruction of the carrier and cruiser because in each case evasive action had to be taken immediately after the attack, but the former was seen to heel over and explode violently. Further successes against supply ships by British submarines operating in Malacca Strait, off the Nicobar Islands and off Sumatra were announced by the Admiralty on March 21.

LOSSES.

The following warships were reported to have been lost during the month of March:—

British—Cruiser Penelope. Destroyers Inglefield and Mahratta. Sloop Woodpecker. Corvette Asphodel. Frigate Gould.

U.S.A.—Destroyer Leopold. Submarines Corvina, Sculpin, Capelin, Scorpion.

APRIL.

The Prime Minister's optimistic statement on the anti-U-boat war, at the end of the previous month, was further justified by the Anglo-American communiqué for April. During this month "... the United Nations' anti-submarine activity continued at a highly satisfactory level. Again for another month the extraordinary fact continues that the number of enemy submarines sunk exceeds the number of Allied merchant ships sunk by submarines."

Some further details of what has come to be known as the Battle of the Atlantic were given by Rear-Admiral Francis S. Low, U.S.N., Chief of Staff of the U.S. 10th Fleet, in a statement made to the Press in Washington on April 24. He said that the German U-boat fleet was suffering "suicidal losses"; that U-boats were sinking considerably less than one half of 1 per cent. of Allied shipping in the Atlantic; that the average life of a German submarine was far less than in 1943; and that it was believed that it took the Germans two or three times as long to build a submarine as that vessel might expect to last on combat patrol. As indicating the very great progress made in providing anti-submarine forces, he mentioned that during 1943 and 1944, there would have been built for the U.S. Navy over a hundred carriers of all types; well over two hundred destroyers; and over six hundred destroyer escorts.

On the other hand, the heavy toll which had been taken of the Norwegian Merchant Navy was apparent when, on April 22, the Norwegian Shipping Minister stated that since April 9, 1940—when Norway was invaded—they had lost four hundred ships aggregating 3,000,000 tons, and 3,000 seamen.

An announcement by the Air Ministry on April 12 said that during the four years since April 13, 1940, mines laid by Bomber Command aircraft in 13,000 sea-mining sorties, ranging from the Bay of Biscay to the Baltic and Norwegian waters, had sunk or damaged over five hundred enemy ships and deprived Germany of over a million tons of shipping. The objects of the operations, which were co-ordinated by the Naval Staff with those of surface minelayers, were (1) to disrupt German sea communications with Norway and Russia; (2) to check enemy raw material imports from Norway, Sweden and Spain; and (3) to dislocate the approaches to the U-boat bases in France and U-boat training waters in the Baltic. The mines dropped were of two kinds—magnetic and acoustic, with an average weight of 1,500 lb. Ascertained successes included damage to the Scharnhorst and Gneisnau on their way from Brest to the Baltic; the blocking of the Kiel Canal for several months due to a ship laden with iron ore blowing up on a mine laid in the Canal; the destruction of another Gneisnau—the 18,000-ton liner being used as a transport, of the troopship Wuri, and of several Baltic ferries carrying military stores and equipment.

The contribution made by the Russian Fleet in sinking enemy shipping was made known in a Moscow statement on April 23 that the Red Navy in two years of war had destroyed four hundred enemy transports aggregating 2,500,000 tons (excluding enemy warships), and that during 1943 the Soviet Fleet Air Arm alone had sunk enemy transports and warships

aggregating over a million tons.

HOME WATERS.

On April 3, naval aircraft made a bombing attack on the Tirpitz, causing such severe damage that she was again disabled for many months. Germany's newest and most powerful battleship was lying in Altenfjord (Norway), where she had been under repair after the injuries inflicted by British midget submarines in September, 1943; but she appeared to be about to move from her anchorage at the very moment when the attack Aircraft carriers, under Vice-Admiral Sir Henry Moore, took place. supported by other ships of the Home Fleet, closed the Norwegian coast in the dark. The first attack by a formation under Lieutenant-Commander R. Baker-Faulkner, D.S.C., R.N., took place just after 4 a.m.; it was followed by a second, an hour later. Both formations consisted of Barracuda torpedo-bombers (42 in all) which were escorted by Corsair, Hellcat, Seafire, and Wildcat fighters. Each attack lasted less than a minute: the first apparently took the Tirpitz by surprise, and hits were scored near the bridge, amidships, and forward of the bridge; the second was pressed home through a smoke screen and obtained hits on the after turret, amidships and on the forecastle. Altogether 40 tons of H.E. were dropped. Four bombs were heavy armour-piercing type and about twenty were of medium size. Violent explosions with flames as high as the ship's mainmast were seen, and at the end of the attack the Tirpitz was adrift, shrouded in smoke, burning fiercely amidships and with other smaller fires elsewhere. Subsequent study of air photographs indicated that a magazine had been hit, that the ship had been severely damaged, and was aground by the stern. In addition, a supply ship was sunk and a tanker set on fire. There was no air opposition, and by the end of the attack the battleship's A.A. fire had been silenced while the shore guns were largely ineffective. British losses were only three Barracudas and one fighter.

H.M. the King and the Prime Minister sent their congratulations on the operation to Admiral Sir Bruce Fraser, C.-in-C. Home Fleet.



Another successful operation by British carrier-borne aircraft took place at dawn on April 26, when Barracudas with fighter escorts attacked a south-bound German convoy of four supply ships and five escort craft off Bodö (N. Norway). The attack was made in a snowstorm, but all the supply ships were hit by bombs, three being left on fire and one aground; an escort vessel was also hit. At the same time naval aircraft attacked shipping in Bardö harbour leaving a large supply ship on fire. One Barracuda and four fighters were lost.

In the early morning of April 23, E-boats attempted to attack a convoy in the English Channel, but were driven off by the destroyer Campbell, the frigate Halsted and light coastal forces. The engagement took place at close range, and two E-boats were seen to have been hit, but their destruction was not confirmed. The enemy craft were also bombed by R.C.A.F. Albacores of Coastal Command as they scattered and withdrew. The same morning there was a brush between British and German light forces off Cherbourg, in which the former scored several hits before the enemy escaped. One M.T.B. was sunk.

Successful attacks by British submarines, commanded by Lieutenant-Commander D. S. R. Martin, D.S.O., and Lieutenants L. S. Launders, D.S.C., J. Whitton, D.S.C., J. P. H. Oakley, D.S.C., A. J. W. Pitt and T. S. Weston, were announced by the Admiralty on April 29 as having taken place during recent patrols in Northern waters. These had resulted in one medium-sized tanker sunk; a large tanker and large supply ship probably sunk; the 8,000-ton German catapult ship Schwabenland left beached and listed after being torpedoed; and five more supply ships and a tanker damaged.

A British force consisting of the new cruiser H.M.S. Black Prince, and the destroyers H.M.C.S. Athabaskan, Haida, Huron, and H.M.S. Ashanti, all of the "Tribal" class, encountered a German force of three or four destroyers of the "Elbing" class off Ile de Bas (north-west of Brest) in the early hours of April 26. The enemy attempted to escape under a smoke screen, but were illuminated by star shell fired by the Black Prince and attacked by the destroyers. One German destroyer was sunk, the rest made off. The British force, which was under the command of Captain D. M. Lees, D.S.O., R.N., in the Black Prince, sustained only minor casualties and superficial damage. On April 29, another encounter in approximately the same area, this time between the two Canadian destroyers Athabaskan and Haida and two German destroyers, resulted in one of the enemy being driven ashore on fire. The Athabaskan was, however, hit by gunfire and torpedo and sank. Over half her complement was saved—the greater number by the enemy. The grounded destroyer was subsequently attacked by R.A.F. Typhoons, but not finally accounted for until May 7, when she was destroyed by torpedoes fired into her by a British light coastal force under Lieutenant-Commander T. N. Cartwright, D.S.C.

ARCTIC.

On April 26, the Soviet High Command announced that a few days earlier the Red Air Force had made five attacks on a large group of German transports in the Barents Sea. Four transports aggregating 20,000 tons were sunk and two badly damaged. Of the naval escort two coastguard vessels and a cutter were sunk and a torpedo boat and cutter damaged. Ten enemy aircraft were shot down. The Russians lost six aircraft.

ATLANTIC.

The Canadian frigate Waskesiu, while on escort duty in the North Atlantic, sank a U-boat which was attempting to attack a valuable convoy; 19 survivors were picked up.

MEDITERRANEAN.

Apart from intermittent support of the Allied western sea flank by bombardments and the routine, but vitally important, work of landing supplies, there was no marked naval activity in connection with the Italian front during April. Some further details of the Navy's part in the Anzio operations were, however, made known in an announcement from Allied Headquarters, Italy, on April 23. This stated that 248 ships of all types, including landing craft, had taken part—as compared with approximately 2,000 used for the invasion of Sicily. Among British losses up to date had been the cruiser Spartan, which it was now reported had been sunk by a bomb which had exploded a magazine; the destroyer Janus, which sank in twenty-two minutes after being dive-bombed; and the destroyer Laforey, which, before being sunk, had fired 2,000 rounds into German positions.

On the night of April 5-6, British and U.S. light coastal craft, between Leghorn and Elba, sank an E-boat and damaged a flak ship; the latter was afterwards seen to blow up. That same night British light craft operating in the Dalmatian Islands captured three enemy schooners carrying food and ammunition. French light forces in the Adriatic attacked an enemy convoy and in a sharp action of forty minutes sank every ship without loss or casualties to themselves. Two spirited actions took place in the Ligurian Sea on the night of April 24. In one, Allied naval forces sank a number of small supply ships and lighters; in the other U.S. warships and M.A.A.F. aircraft sank an enemy corvette and damaged two destroyers. On that date it was also announced that the Italian Regia Aeronautica, largely reformed and now numbering some hundreds of aircraft, was operating from the east coast in conjunction with the Allies in the Adriatic, as well as on anti-U-boat patrols, convoy, and air-sea rescue work.

With the publication in the London Gazette of April 19 of awards to six officers and men who had taken part in an attack on enemy ships in Palermo Harbour as long ago as January, 1943, some details were released of the hitherto secret British weapon which became known as the "human torpedo." This is operated by two men sitting astride it in diving suits. Driven by a silent electric motor, it can make its way on the surface, or at "periscope depth"—the commander's head acting as the periscope or completely submerged. On nearing its target, the "human torpedo" approaches under-water until the explosive charge in the warhead can be removed and attached to the ship's bottom. It is fired by a time fuze which gives the crew a chance to get out of range of the explosion on the headless torpedo. Using one of these weapons, Lieutenant R. T. G. Greenland, R.N.V.R., sank the new Italian light cruiser Ulpio Traiano, and another, handled by Sub-Lieutenant R. G. Dove, R.N.V.R., caused such severe damage to the 8,500-ton transport Viminale that she foundered while in tow. Both officers were awarded the D.S.O. for "great gallantry."

INDIAN OCEAN.

Naval aircraft from carriers, supported by a strong fleet of battleships, cruisers and destroyers under Admiral Sir James Somerville, bombed the Japanese bases of Sabang and Lho-Nga in North Sumatra, near the entrance to Malacca Strait on April 19. The attack was launched at dawn, and many hits were scored on the Sabang dockyard, power station, hangars and wireless station; 2 Japanese destroyer escorts were set on fire and 2 merchant ships of 4,000-5,000 tons were hit; over 20 grounded aircraft were destroyed. Other grounded aircraft were accounted for at Lho-Nga. After the attack three Japanese torpedobombers, approaching the fleet, were shot down by fighters. No damage or casualties were sustained by the Allied warships; the pilot of the only aircraft lost was rescued from the sea by an Allied submarine.

PACIFIC.

In a survey of the situation in the Pacific theatre of the War, the U.S. War Department, at the beginning of the month, said that approximately 100,000 Japanese soldiers were besieged in islands in the south and south-west of that ocean "facing a hopeless future with the alternatives of death by guns or by starvation and disease." In the Marshalls, the North Solomons, and the Bismarck area they were in the grip of a relentless sea and air blockade, and no substantial aid had reached them in recent weeks; nine out of every ten supply vessels attempting to bring in supplies were being destroyed, and half the barges trying to run the blockade by night were being sunk. An announcement from Washington on April 4 described a raid on Palau, Woleai, and Yap Islands as having been carried out, between March 30 and April 1, by the most powerful fleet of American battleships, aircraft carriers, and escort vessels ever assembled in the Pacific. It had resulted in the destruction of all enemy vessels present in those anchorages.

On April 11, the U.S. Navy Department announced the occupation of four more atolls in the Marshalls Group—Ailuk, Rongelap, Likiep, and

Utirik.

A major combined operation, on April 23, effected landings at three points on a 150-mile front in N.W. New Guinea. The forces engaged were stated to be the biggest Allied assembly of warships, aircraft, and troops yet seen in the S.W. Pacific. Under cover of naval bombardments by cruisers, which included H.M.A.Ss. Australia and Shropshire, destroyers and gunboats, and supported by land-based and carrier-borne aircraft, American, Australian, and Dutch troops, encountering very little opposition, landed at Aitape (Australian New Guinea—60 miles N.W. of Wewak); Hollandia (Dutch New Guinea); and Tanah Merah Bay (30 miles N. of Hollandia). The operations as a whole were a complete surprise to the enemy and led to the liberation of the first Dutch territory in the Island, the isolation of the Japanese 18th Army, and the capture of a large amount of booty.

On the same day U.S. forces occupied the westernmost of the Marshall atolls—Ungelap, thereby securing a new base 264 miles from Tonape

and 644 from Truk.

The month closed in the Pacific with a bombardment by a powerful task force under Vice-Admiral Mark A. Mitscher, U.S.N., of the Japanese naval bases at Truk and Sataman in the Carolines. Carrier-borne air-

craft, battleships, cruisers, and destroyers caused heavy damage to ground installations; and the enemy lost 126 aeroplanes. No Allied warships were damaged, and there were only light airforce casualties.

LOSSES.

The following Allied warships were reported to have been lost during April:—

British—Destroyers H.M.S. Laforey and H.M.C.S. Athabaskan. Submarine Syrtis. Minesweeper Maaloy.

United States—Destroyer Lansdale.

MAY.

It was made known on May 14 that the King had paid a four-day visit to the Home Fleet in Northern waters, "to take leave of his captains and bid them and their ships' companies God-speed before battle." Subsequent events showed that His Majesty's visit and his inspection of fourteen ships and of detachments from nearly every other ship present, were associated with the great invasion operations in which the Navy would be called upon to play such a vital part. The King put to sea in an aircraft carrier and witnessed realistic exercises by the Naval Air Arm. He also went out in a destroyer and witnessed a dummy U-boat hunt; and he inspected midget submarines and human torpedoes.

The month's joint statement on U-boat warfare during May read:

"... our shipping losses have been by far the lowest for any month of
the War, and have in fact been a fraction of the losses inflicted on enemy
shipping by our warships and aircraft, although their merchant shipping
is petty compared to that of the Allies. There has been a lull in the
operations of the U-boats, which perhaps indicates preparations for a
new offensive. The change which has come over the scene is illustrated
by the fact that, in spite of the few U-boats at sea, several are now sent to
the bottom for each merchant ship sunk, whereas formerly each U-boat
accounted for a considerable number of merchant ships before being
destroyed. This is to be ascribed to the vigilance and relentless attacks
of our Anglo-American-Canadian anti-U-boat forces, including the
scientists who support them in a brilliant manner."

An account was published in the United States on May 26 of an encounter of the 8,000-ton Portuguese liner Serpa Pinto with a U-boat. This vessel was carrying refugees from Europe to Canada when she was stopped in mid-Atlantic by a German submarine. Two U.S. citizens were taken prisoners; the whole of the 385 passengers and crew were made to leave the ship and had to remain for nine hours in the boats while the U-boat captain waited for a reply from Berlin to his wireless signal asking whether he should sink the Serpa Pinto or not. Having received instructions not to do so, the crew and passengers were allowed to re-embark; but three lost their lives in the process of transfer between the liner and boats.

The use of rocket projectiles as an anti-submarine weapon was first made known in an announcement by the U.S. Navy Department, on May 25, that Grumman Avengers (navy bombers) had sunk a large U-boat, caught on the surface earlier in the year, by this means.

Some details of the adventures of H.M. Submarine Sybil (Lieutenant E. J. D. Turner, D.S.O., D.S.C.) were given in an announcement by the

Admiralty, after her return home from the Mediterranean. In addition to sinking many enemy ships, she had carried out important secret missions including the embarkation of members of General Giraud's staff from the French Riviera and of the head of the Corsican resistance movement during the German occupation of Corsica.

The formation of a special unit, known as "Beach Signals," was made public, together with the fact that it was composed of men of the Royal Corps of Signals and signal ratings of the Royal Navy. It was designed to establish wireless communication between Army units who had landed with commanders still afloat. Beach Signals land with the first assault troops.

On May 20 the Japanese News Agency reported the death of Rear-Admiral Torajiro Sato, commanding Japanese submarines, and of Rear-

Admiral Tamagai, both "killed in sea fighting."

ARCTIC.

An Admiralty announcement on May 19 gave particulars of the successful defence of the largest convoy yet sent to North Russia. During an action fought over several days inside the Arctic Circle and in intense cold and severe weather, one U-boat was sunk by H.M. destroyer Onslaught and two more by Swordfish aircraft flown from the escort carrier Chaser. A number of other attacks were made and other U-boats were believed to have been sunk or damaged. Several survivors were picked up. H.M. destroyer Mahratta was torpedoed and sunk during the action. The escorting force was under the command of Vice-Admiral I. G. Glennie, in the cruiser Black Prince.

HOME WATERS.

Carrier-borne aircraft attacked two south-bound enemy convoys off Kristiansund in the early hours of May 6. The attack was made by a carrier force of Barracudas, escorted by Hellcats under the command of Captain H. V. Grace, R.N., in H.M.S. Berwick. The aircraft accounted for a 10,000-ton freighter, which was hit by bombs and torpedoes and broke in two; a 3,000-ton freighter sunk; and a 10,000-ton tanker severely damaged. An enemy escort vessel also received a direct hit and two German aircraft were destroyed. The British force lost two Barracudas.

A somewhat similar operation, also in Norwegian waters, was carried out by carrier-borne aircraft escorted by warships under the command of Rear-Admiral A. W. La Touche Bisset in the cruiser Royalist; some details were given in an Admiralty announcement on May 17. Bomb-carrying Hellcats, escorted by Wildcat and Hellcat fighters, damaged two supply ships and two armed trawlers. They also bombed oil tanks and a fish-oil factory at Stadtlandet (about 125 miles north of Bergen), and shot down nine enemy aircraft. Five naval aircraft were lost, but there was no other damage nor any casualties.

Other naval activity in home waters was confined to encounters between light craft, in which French forces played an active part. It was made known on May 4 that during a recent offensive patrol in the Channel H.M. frigate Rowley, in company with the French destroyer La Combattante, engaged in a running fight with a strong force of E-boats, contact being maintained to within a few miles of Cap Barfleur. One E-boat was sunk by the French warship. On May 8, French light forces sighted and attacked at close range a strongly escorted enemy convoy in the Channel.

A supply ship and armed trawler were torpedoed and believed to have been sunk; other vessels were damaged by gunfire. The Allied craft returned to their base without casualties and with only slight damage. British light forces were in action with enemy patrol vessels off the Dutch coast on May 10, and attacked a small convoy off the French coast on May 12. In both encounters damage was inflicted on the enemy. The British craft sustained only light casualties and damage.

On May 18 La Combattante was again in action with E-boats, a strong force of which she intercepted 25 miles south-east of the Isle of Wight. She sank one, damaged another, and dispersed the remainder, returning to harbour without damage or casualties and having picked up a number

of German survivors.

ATLANTIC.

An Admiralty announcement on May 11 credited H.M. frigate Spey (Commander G. A. Ormsby, D.S.C., R.N.) with having sunk two U-boats by gunfire and depth charges whilst helping to escort a convoy in the Atlantic. She rescued 61 German survivors. On the last day of the month it was reported that a U-boat had recently been sunk in the North Atlantic by an escort group under Commander P. W. Burnett, D.S.C., R.N., in H.M.C.S. St. Catharines—frigate. The submarine was depth-charged and forced to the surface by the Canadian destroyer Gatineau, and then sunk by H.M.S. Icarus—destroyer. A number of survivors were picked up.

MEDITERRANEAN.

The general offensive on the Italian front started on the night of May 22. It was preceded by what was described as "a tremendous Allied artillery barrage... supported by heavy fire from warships offshore."

Frequent mention was made in communiqués of the support given by naval gunfire; that issued on May 17 referred to the fact that British and U.S. cruisers had fired nearly 8,000 rounds into enemy positions; also to Allied minesweepers working off the coast under enemy fire and to the

sinking of an E-boat off Anzio.

Admiral Sir John Cunningham, C.-in-C. of the Mediterranean Fleet, sent a special message of congratulation on May 21 to a British mine-sweeping flotilla commanded by Commander A. A. Martin, R.N.R., comprising H.M. minesweepers Brixham, Bude, Polruan, Rhyl, Rothesay, and Stornoway, on their outstanding work in sweeping mines off the Italian coast during the operations.

Further successes by British submarines in these waters were announced by the Admiralty on May 1. The names of nine commanding officers were mentioned as having contributed to the sinking of two medium-sized supply ships off the French Riviera, and twenty small supply ships, including some carrying petroleum, in the Ægean; seven other vessels, including a large supply ship and two tankers, were damaged.

BLACK SEA.

The capture of Sevastopol by the Russians on May 9 restored to them the virtual control of the Black Sea. This historic port had already been invested by land, sea, and air when the Soviet forces began their final three days' assault; during that stage of the operations intensive attacks were made on the enemy's sea communications. A joint Russian navalair report announced that, on May 6, Soviet Fleet aircraft had sunk

four transports aggregating 10,000 tons, sailing in an escorted convoy to the south-west of Sevastopol; also a cutter and several landing-barges. The following night Red aircraft and M.T.B.s sank two 7,000-ton transports and set fire to several other ships which were seen to blow up. During the final assault, the Black Sea Fleet and the Fleet aircraft kept up the attacks on evacuating shipping; two transports totalling 4,000 tons and a number of smaller craft were sunk. With Sevastopol once again available as a base, the Soviet Fleet regained uninterrupted control of the coast-line from Batum to the Dnieper Estuary, beyond Odessa.

INDIAN OCEAN.

An Admiralty announcement on May 2 made known that during recent patrols H.M. submarines under the command of Lieutenant-Commanders M. R. G. Wingfield, D.S.O., D.S.C., R.N.; R. L. Alexander, D.S.O., R.N., and E. P. Young, D.S.C., R.N.V.R., had torpedoed and sunk a Japanese destroyer and two medium supply ships off the Andamans; sunk three more supply ships in an escorted convoy in Malacca Strait; damaged two supply ships and an escort vessel; and bombarded military targets on Ross Island (Port Blair), in the Andamans. The same day it was reported that R.A.F. bombers carrying out a reconnaissance over the Indian Ocean had depth-charged and sunk an enemy submarine S.W. of Soccotra, near the entrance to the Gulf of Aden.

PACIFIC.

The most notable operation during the month was a heavy bombardment of Surabaya (Java), carried out at dawn on May 17 by nearly a hundred aircraft belonging to the South-East Asia, Central Pacific, and South-West Pacific Commands, flown from British and U.S. carriers, supported by British, American, Dutch, Australian, and French warships. This combination of forces under Admiral Mountbatten, General MacArthur, and Admiral Nimitz, took the Japanese completely by surprise, with the result that great damage was inflicted at this, the main enemy base in the South Pacific. Ten ships (aggregating 35,000 tons) were hit and believed sunk, the Braat engineering works and the Wonokromo oil refinery were completely destroyed, oil storage tanks left ablaze, floating and dry docks and other naval installations badly damaged. The enemy also lost nineteen aircraft destroyed on the ground and two shot down. The Allies only lost three aircraft. The same night Surabaya was bombed again by U.S. land-based Liberators from Australia.

Other carrier-borne air attacks during the month were those carried out on May 19-20 by a U.S. force which dropped 148 tons of bombs on aerodromes, supply dumps, and gun positions in Marcus Island—about 1,000 miles N.E. of Guam; and another when 150 tons were dropped on installations in Wake Island on May 23. Naval bombardments were carried out by U.S. battleships on Ponape (Carolines); and by Australian destroyers and corvettes against enemy shore batteries and installations on the coast between Hausa Bay and Wewak (New Guinea) on May 12-13. On the last day of the month, Mr. Forrestal, U.S. Navy Secretary, summarising the results of recent carrier-force attacks on Saipan, Truk, Tinian, and Palau, said that the Japanese had lost 500 aircraft, 52 warships and merchant vessels sunk, and 32 more ships damaged. The American losses had been 48 aircraft, half the crews of which had been rescued. Not a single U.S. warship had been damaged.

U.S. infantry, under cover of a bombardment by Allied warships, made a new landing in Wakde Island (New Guinea), on May 17; all

resistance was crushed and the airfield captured by May 19.

A further landing was made in New Guinea on May 28, when U.S. forces followed up a bombardment by Allied warships and went ashore at dawn on Biak Island about 200 miles west of Wakde. General MacArthur's communiqué on these operations said, "For strategic purposes this marks the end of the campaign which has resulted in the reconquest or neutralisation of the Solomons, the Bismarcks, the Admiralties, and New Guinea. . . . These operations have effected the strategic penetration of the conquered empire which Japan was attempting to consolidate in the S.W. Pacific, and have secured bases of departure for the advance to its vital areas in the Philippines and Netherland East Indies."

U.S. submarines had a number of successes during the month. A Navy Department announcement on May 2 said that during recent patrols they had sunk a Japanese light cruiser, two destroyers, one large naval auxiliary, one tanker, and seven cargo ships. Another communiqué on May 25 credited them with fifteen more Japanese ships, including a

destroyer, four transports, three tankers, and seven cargo ships.

LOSSES.

The following British warships were reported lost during the month of May:—

Frigate Valleyfield. Submarine Stonehenge.

The Australian Department of Information, in an announcement on May 2, reported that although the R.A.N. had lost since 1939 three cruisers—H.M.A.S. Sydney, Canberra, and Perth, three destroyers, and three smaller units, it was far stronger now than ever before.

JUNE

All other events during this month were put in the shade by the greatest combined operation of this or any other war—the invasion of Northern France. As this forms the subject of a separate chapter, it will only be necessary to chronicle here the successive stages and major events.

The landing started between 6.30 and 7.30 a.m. on June 6. It was supported by a naval bombardment, in which British and American warships of all classes, from battleships down to landing craft specially equipped with rocket projectors, took part, and by exceptionally heavy bombing attacks. Tactical surprise was almost complete and, in spite of bad weather, the Allied forces at once secured and subsequently retained a foothold at selected places in the Bay of the Seine between the east shore of the Cotentin peninsula and a point east of the Orne.

From that moment it became a race with the enemy to bring up re-

inforcements—on the one side by sea, on the other by land.

Thanks to the undaunted courage of the crews of the landing craft and the effective cover provided by naval guns in co-operation with R.A.F. aircraft, by the end of the first week after the initial landing, the Allies' hold on the invaded territory was assured. How well the armies were established by June 16 was evidenced by the fact that on that day the King crossed the Channel in H.M.S. Arethusa, escorted by the destroyers Scourge and Urania and with air cover provided by Spitfires. His Majesty landed on the French coast near Courseulles.

On June 25, an Anglo-American squadron, which included battleships and cruisers, bombarded strong coastal batteries in and around Cherbourg for three hours. The following day U.S. forces reached the water-front of the port, attacking from inland, and rapidly extended their hold. June 27, S.H.A.E.F. announced "The fall of Cherbourg ends the second phase in the campaign of liberation." There was still much work to be done in clearing the harbour of mines and obstructions and re-establishing unloading facilities; but with this accomplished the Allies had a first-class port and naval base close to the new front. The German sea defence commander of Normandy, Rear-Admiral Hennecke, was captured in Throughout the month, after the landing, the Allied Navies were the mainstay of the operations in safeguarding sea communications to the invading Armies; in landing reinforcements and supplies on the beaches despite the heavy seas prevailing for most of the time; and in providing heavy artillery support whenever and wherever required against objectives within range of the ships' guns.

The Anglo-American monthly statement on the war against U-boats during this month said, "Hitler's submarine fleet failed on all counts in June, 1944." After alluding to their inability to interfere with the invasion, the statement concluded, "Their sinking of United Nations' merchant vessels reached almost the lowest figure of the war. For every merchant vessel sunk several times as many U-boats were sent to the bottom."

HOME WATERS.

Although the enemy made no attempt to use his few remaining large ships as a fleet to interfere with the invasion, his lesser surface warships and U-boats were very active and had constantly to be watched for and attacked. Before dawn on June 9 a brisk destroyer engagement took place off Ushant. German destroyers, which had been sighted and reported by Allied aircraft, were brought to action by H.M.Ss. Tartar, Ashanti, Eskimo, Javelin, H.M.C.Ss. Haida and Huron, and the Polish Piorun and Blyskawicza. At times fighting was at point-blank range, and the Tartar passed right through the enemy's lines, sinking one German destroyer and driving another ashore in flames near Brest. The destruction of the latter was completed the same night by a R.C.A.F. air squadron using rocket projectiles.

After dawn on that same day strong forces of E-boats attempted to enter the invasion area from both the east and the west, but were driven off by coastal craft. During the night Allied destroyers engaged and drove off heavily-armed enemy craft which appeared between the mainland and the Iles de San Marcouf.

On the following night (June 10-11) there were a number of encounters with E-boats in which one was sunk and another damaged; two were set on fire by aircraft off Ostend.

German light-craft pens were bombed by the R.A.F. in an attack on Le Havre on June 14 and on Boulogne the following night. There was a brush with light forces on each of the days—June 23, 25, 27, and 28.

In anticipation of the Allies attempting invasion of the Continent, the enemy had concentrated strong forces of U-boats in the Bay of Biscay ports, and as soon as he knew that a landing was taking place they were sent out to do their utmost to interfere. They were also operating off the Norwegian coast, doubtless in case that country should also be invaded. Anti-submarine measures, in which Coastal Command aircraft played a

conspicuous part, were successful in countering what constituted a major effort by the enemy to cut the Allies' sea communications in the Channel.

On June 14, the command of the Home Fleet was handed over by Admiral Sir Bruce Fraser to his second-in-command, Vice-Admiral Sir Henry Ruthven Moore, who was promoted to acting Admiral on taking up his new appointment.

ATLANTIC.

The very heavy demands which a great Continental campaign implied, made it more than ever important to counter attacks on trans-Atlantic convoys, whether made by aircraft or U-boats. An account of a successful engagement with the former was published by the Admiralty on June 4. In this, Hurricane fighters flown from the escort-carrier Nairana intercepted a number of Ju. 290's which were shadowing a valuable convoy in the North Atlantic. They shot down two and drove off the remainder. Five enemy airmen were picked up by the frigate H.M.S. Inglis. The Nairana lost one aircraft.

The sinking of a U-boat, also in the North Atlantic, by the destroyers H.M.S. Forester and H.M.C.S. St. Laurent, was reported from Ottawa on June 5. The submarine was attacked by depth charges and gunfire. A direct hit on the conning tower by a shell from the St. Laurent killed the German captain and first lieutenant. A number of the crew were taken prisoners. A further success contributed to by the Canadian Navy was made known on June 13. After being damaged by a Wellington bomber, a U-boat was sunk in mid-Atlantic by H.M.C.S. Prince Rupert, frigate, operating with two U.S. warships.

Although only published now, long after the event, there seemed to have been a certain poetic justice in the fact that when, on March 13, 1943, the liner Empress of Canada was sunk by an Italian submarine 500 miles s.s.w. of Freetown, among the many who lost their lives were a number of Italian prisoners. This was eventually made known in Capetown on June 3, 1944.

MEDITERRANEAN.

The succession of landing operations in Sicily and Italy, in which the Navy had taken such a vital part, culminated on the night of June 4-5 with the Allies' entry into Rome. On June 12, Allied Headquarters reported that a naval party had taken over the port of Civitavecchia—some forty miles north of Rome. It had been extensively damaged by the enemy before evacuation.

Another historic place captured during the month was the island of Elba. In the early hours of June 16 an allied force which included British, American, and French warships and aircraft, prepared the way for French troops to land in the south, south-east, and central sections of the island. The naval and air bombardments overcame the main resistance, which was in the Golfo di Campo, forced the German troops off the beach, and enabled a firm foothold to be obtained by the invading force. By the evening of the same day one-fifth of the island was in French hands and their flag was flying from the villa where Napoleon lived. By the morning of June 19 all resistance in the island had ceased.

A remarkable success was scored in an attack against two enemy convoys near Leghorn, made by six R.A.F. Hurricanes, escorted by French fighters. Five of the escorting E-boats were sunk or beached. The convoys lost

three schooners and two barges. Another achievement was the bombing and disabling of the 30,000-ton liner Roma on June 20. The ship was lying in Genoa harbour and was apparently being converted into an aircraft carrier.

British destroyers had a brush with E-boats off the Dalmatian Coast on

the night of June 11-12, sinking one.

An enemy convoy, on its way to Heraklion with reinforcements for the German garrison in Crete, was successfully attacked on June 1 in the Ægean by R.A.F. and South African Beaufighters and Marauders. One of the four destroyers and one of the four escort ships with the convoy were hit and crippled. Two of the three merchant ships, each of about 2,000 tons, were left burning. All the other ships were hit. The convoy had strong air cover, and six British aircraft were lost; two of the enemy were shot down.

On June 5, the Admiralty named six commanding officers whose submarines, during recent operations in the Mediterranean and Ægean, had sunk by torpedoes and gunfire four large and medium supply ships, one being in a strong convoy bound for Crete with munitions; twenty-two small supply ships; and five naval auxiliaries, including a minesweeper, a salvage vessel, and a heavily-armed vessel believed to have been a minelayer. They had also bombarded an oil refinery on the Italian Coast, a goods yard and seaplane hangar on the French Riviera, and a radio station in Crete.

On June 30, the High Command Headquarters of the Mediterranean was moved from Algiers to Italy. All the other H.Qs., including those of the Royal Navy and U.S. Navy, moved with them.

PACIFIC.

The chief events of the month in the Pacific area of the war were the capture of the important Japanese base in Saipan, in the Mariana Islands, and the defeat of the enemy fleet and air forces sent to counter this further

penetration of his vital outposts.

On June 10, the U.S. Navy Department announced that a powerful carrier task force had struck at Guam and two other islands of the Mariana group. Three days later it was made known that the other islands were Saipan and Tinian. On June 14, it was reported that U.S. battleships and cruisers had been bombarding them; and early next day U.S. assault troops landed in Saipan. Nearly all the heavy coastal and A.A. batteries had been knocked out by bombing and shelling and, in spite of strong enemy resistance a foothold was firmly established. By June 25, the Japanese High Command estimated that two U.S. divisions had been landed and that several battleships and aircraft carriers, with a hundred transports, were anchored off the island.

Meanwhile, on June 19, carrier-based reconnaissance aircraft of the U.S. 5th Fleet had sighted a Japanese fleet of battleships and carriers about midway between the Marianas and Luzon (Philippines). A great sea—air battle was fought that afternoon. In his subsequent report, Admiral Nimitz said that carrier-borne aircraft had secured three hits with 1,000 lb. bombs on a 20,000-ton carrier of the Zuikaku class; a Hayataka class cruiser had been sunk and another left burning; and at least one bomb hit had been secured on a light carrier; a 30,000-ton battleship of the Kongo class, a cruiser and three destroyers had been damaged, one of the latter was believed to have been sunk. Three tankers had been

sunk and two left on fire. Fifteen to twenty enemy aircraft were destroyed. The rest of the Japanese fleet withdrew as night fell and made for the channel between Luzon and Formosa. The U.S. Force lost 49 aircraft. The Japanese communiqué admitted the loss of an aircraft carrier and 50 aircraft and that the Japanese fleet had been "unable to inflict a decisive blow on the enemy."

In the same report, Admiral Nimitz mentioned an attack by strong enemy air forces on the American fleet off Saipan on the day preceding this battle. He claimed 335 Japanese aircraft shot down by U.S. carrier-borne aeroplanes and a further 18 by A.A. fire, for the loss of only 21 American aircraft. One U.S. battleship and two cruisers received superficial damage.

Another communiqué from Admiral Nimitz, on June 25, stated that in all the Mariana actions, including the engagement with the enemy's fleet on June 19, 747 Japanese aircraft were destroyed, 44 ships sunk, and 47 damaged. U.S. losses were 151 aircraft and 4 ships damaged. On the same date the Japanese High Command admitted that the American operations constituted "a direct threat to Japan and the Philippines."

In New Guinea waters Allied naval and air forces actively supported U.S. troops battling for the Mokmer airfield in Biak Island; by June 9 this had been firmly occupied.

On June 8, a Japanese squadron, consisting of a cruiser and six destroyers with an air escort of ten fighters, was intercepted while on its way to Geelvink Bay by ten Allied Mitchells. The latter, pressing home an attack with 1,000 lb. bombs from masthead height, damaged the cruiser, sank four (probably five) destroyers, and shot down five enemy fighters. Four Mitchells were lost.

A daring raid was made by carrier-borne aircraft against Iwo Jimi, one of the Volcano Islands, on June 28. Their objective is only some 500 miles from Tokio, and the attack met strong resistance from the air. Sixty enemy interceptors were destroyed, twelve in an unsuccessful attempt to strike at the carriers. Only four U.S. fighters were lost.

The U.S. Navy Department estimated on June 5 that a total of 589 Japanese ships had been sunk by American submarines.

LOSSES.

No losses of British warships were reported in June. The 1,475-ton U.S. submarine Grayback was sunk while operating in the Pacific.

JULY

With the Allied invasion armies well established in Normandy, the Navy's role was to keep open the cross-Channel sea communications, land reinforcements and supplies, and provide heavy gunfire in support of military operations. A joint statement by Mr. Churchill and Mr. Roosevelt on July 9 described the success with which the U-boat menace to those communications was being met. It read:

"Thousands of Allied ships have been moved across the Channel to Normandy and coastwise to build up the military forces engaged in the liberation of Europe. No merchant vessel of this vast concourse has been sunk by U-boat with the possible exception of one ship. This is despite attempts by a substantial force of U-boats to pass up-Channel from their bases in Norway and France. . . . Both aircraft and surface forces followed up sighting reports, bunting and attacking the U-boats with relentless determination. The enemy were thus frustrated by the brilliant and unceasing work of Coastal Command and the tireless patrols of the surface forces, and have suffered heavy casualties."



In a later joint statement, covering the whole month of July, it was announced that "seventeen U-boats have been sunk while attempting to interfere with our cross-Channel traffic since the first landing of the Army of Liberation."

The same statement made known that the number of U-boats sunk since the war began was in excess of five hundred; this implied a loss of some 20,000 specially trained personnel. It was added that "The U-boat fleet is still of impressive size; nevertheless, the U-boats remain the hunted rather than the hunters."

By the death in hospital, on July 9, of Captain F. J. Walker, C.B., D.S.O., R.N., the Allies lost a commander of Escort Groups who had had outstanding successes in the Battle of the Atlantic. Details of one of the

greatest of his exploits will be found in this Chronicle for March.

Some particulars of the remarkable exploits of blockade runners, which had maintained a regular service with Sweden throughout the winter of 1943-44, were published on July 17. Five ships of the Ellerman Line—the Gay Corsair (Captain R. Tanton); Gay Viking (Captain H. Whitfield); Hopewell (Captain D. Stokes); Nonsuch (Captain H. W. Jackson); and Master Standfast (Captain C. R. Holdsworth)—ferried between the East Coast of Britain and the small port of Lysekil, North of Gothenburg, bringing home valuable cargoes—chiefly ball bearings—from Sweden. They had to run the gauntlet through the strongly-guarded and narrow waters of the Skagerrak. Their success, in the words of the announcement, was achieved by "a combination of careful planning, courage, bluff, and grand seamanship." The last-named ship of the list was the only one lost: she was captured by German warships, her Master being killed.

An important change of command was announced on the last day of the month, when it was made known that Admiral Sir Bruce Fraser had relieved Admiral Sir James Somerville as Commander-in-Chief of the Eastern Fleet. Admiral Somerville had held that appointment since 1942.

The deaths in action of four Japanese Admirals were reported during the month: Vice-Admiral Chuichi Nagumo, C.-in-C. Central Pacific Area; and Rear-Admirals Yano and Tsujimura, in the Saipan fighting; and Vice-Admiral Hasagawa (formerly Governor of Formosa).

It was announced in Ottawa that a training base for the Royal Canadian

Navy had been established in Bermuda.

On July 18, a disaster recalling that which occurred at Halifax in the war 1914-18, was caused by the blowing up of two naval cargo ships while being loaded with ammunition in Port Chicago, California. Nine officers and 200-250 naval personnel, in addition to the crews, were killed and about 1,000 people injured. This war-time settlement was virtually wrecked.

HOME WATERS.

Throughout the month the Navy in home waters was constantly engaged in defeating attempts by E-boats to attack shipping plying to and from Normandy. On the night of July 2-3, they made a sustained effort to enter the central waters of the Channel from the east, and a succession of engagements took place off Cap d'Antifer. Two E-boats were badly damaged. H.M. ships suffered neither damage nor casualties.

In the early morning of July 8, a group of E-boats tried to break into

the eastern anchorage off the Normandy invasion coast. They were intercepted and driven off by the destroyer Thornborough, two being severely damaged. Later in the day other E-boats were engaged by H.M. destroyer Catterick and the French destroyer La Combattante and British light forces. They escaped towards Le Havre, but were fired on by some of their own M-class minesweepers. Another brush with these enemy craft occurred in the same locality on July 15. In the early morning of July 29, H.M. destroyer Forrester had several encounters with R-boats off Cap d'Antifer and damaged three.

Similar contacts were made during the month with enemy light craft off the Dutch coast and Lorient. The general impression left by the published reports of these encounters is that the enemy was able to avoid

more serious punishment because his craft had superior speed.

The strategically important town of Caen, which had been the eastern stronghold of the German line in Normandy, was captured on July 9. Special mention was made of the powerful support given in this advance by the guns of H.M. battleship Rodney, cruiser Belfast, and monitor Roberts.

R.A.F. Beaufighters made havor of an enemy convoy of nine merchant vessels and their escort of 31 warships which they caught off Heligoland on July 21. In a low-level attack and without loss to themselves, they sank four of the merchant ships by torpedoes, left two more sinking, set five of the escort on fire, and hit nearly every other vessel.

Just before dusk on July 28, Avenger dive-bombers of the Naval Air Arm attacked three minesweepers and four landing craft off St. Malo, sinking one of the latter and machine-gunning the whole convoy. The landing craft were crowded with German troops which, apparently, were on their way to reinforce Rommel's army in Normandy.

MEDITERRANEAN.

When, on July 18, the port of Ancona was captured it was found that among the block ships sunk by the enemy was the King of Italy's yacht.

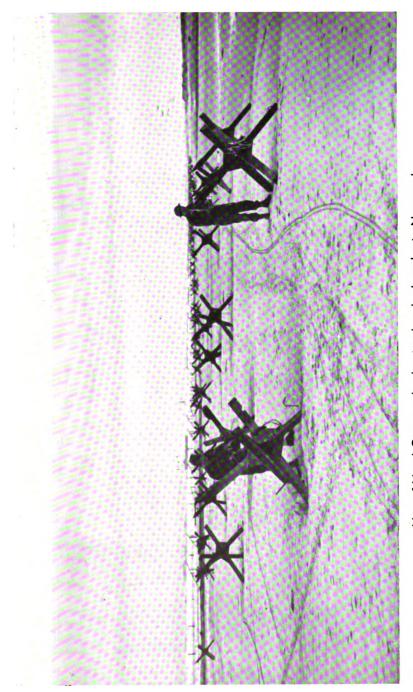
The following day Leghorn was captured. This important port had suffered from exceptionally thorough demolition before it was evacuated, and sixteen ships had been sunk in the harbour approaches—a formidable task for the Allied technicians and experts who had already got Naples and Civitavecchia in working order.

On July 8, the Admiralty published the names of seven commanding officers of submarines who had been concerned with recent successes in the Mediterranean and Ægean. These included the sinking of two large transports, both torpedoed in a French Mediterranean harbour; a large tanker in convoy; eight supply vessels; two Siebel ferries; two submarine chasers; and two small auxiliary craft.

BLACK SEA.

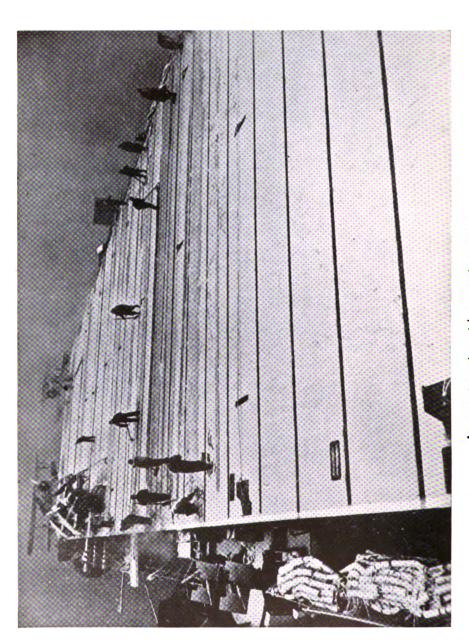
It was notified by Ankara radio on July 22, that the sailing of all Turkish shipping in Black Sea waters was suspended consequent on submarine attacks in territorial waters. On July 19 the Turkish steamer Canary, while *en route* for the Bosporus, was missed by two torpedoes which exploded on the shore; the following day a small craft was hit by a torpedo and three of her crew killed. The nationality of the submarines was unknown.





Men of Naval Commando clearing beach obstacles in Normandy.

(British official photograph. Crown copyright reserved.)



An escort carrier with an arctic convoy. (British official photograph. Crown copyright reserved.)

INDIAN OCEAN.

In the early morning of July 25, the Eastern Fleet carried out a very successful bombardment of the Japanese base of Sabang at the N.W. extremity of Sumatra. Battleships, cruisers, destroyers and carrierborne aircraft all took part in pounding the shore objectives. installations were almost completely destroyed; at least sixteen salvoes of heavy shells hitting dockyard workshops, wharves, and godowns. Half the barracks area was devastated by ten heavy salvoes, and the radar station severely damaged by air bombing and destroyers' gunfire. While the bombardment was at its height, three destroyers and a Dutch cruiser, led by Captain R. G. Onslow, D.S.O., R.N., entered the harbour, engaged and silenced the shore batteries at close range, sank a mediumsized merchant vessel, and demolished two jetties. The fleet suffered only minor damage and two fatal casualties. One aircraft came down in the sea after catching fire, but the pilot was saved by a British submarine. Two Japanese aircraft were shot down and four more destroyed on the ground. In the evening enemy aircraft tried to attack the ships, but three were shot down and the rest driven off.

Admiralty announcements on July 5 and 28 mentioned the names of a number of commanding officers of British submarines who had made successful attacks on enemy shipping, mostly in the neighbourhood of Sumatra and the Andaman Isles. The first report mentioned the sinking of nine and damage to two Japanese supply ships; the second recorded the destruction of twenty-one and damaging of two more supply ships and a tanker.

Submarines also bombarded oil installations at Sibolga, N.E. Sumatra, and installations on Ross Island, one of the Andamans.

PACIFIC.

Supported by naval gunfire and air bombing, American Marines and infantry steadily improved their hold on Saipan, until, on July 9, Admiral Nimitz was able to announce that all organized Japanese resistance had ended. The capture of Saipan, it was pointed out, gave the Allies a base of the highest importance from which it would be possible to fly direct and bomb Japan less than 1,500 miles away. It also provided deep water harbours and two airfields.

The next objectives were Guam and Tinian—the more southerly islands of the Mariana group. The attacks started with the usual systematic bombing by carrier aircraft. This was followed up by U.S. warships shelling coastal and A.A. batteries, and on the morning of July 20, a landing in Guam was effected under cover of the ships of the U.S. 5th Fleet commanded by Admiral Spruance. The amphibious part of the operation was under the orders of Rear-Admiral Richard L. Connolly, U.S.N.

Three days later, after the usual softening up process, U.S. Marines landed on Tinian Island. They encountered only light resistance and, supported by naval gunfire, aircraft bombing, and artillery fire from Saipan, 2½ miles away, they made rapid headway.

A third island, Rota, between Guam and Tinian, was also subjected to bombing attacks and bombardment during the month, obviously as a preliminary to its capture at a later date.

The Volcano Island of Iwojima and Hahajima in the Bonin group,

still nearer Japan, were visited by aircraft, cruisers, and destroyers of a fast U.S. task force, on July 3. The first-named was shelled by the warships. During these operations three Japanese destroyers were sunk, and a fourth left burning; a large cargo ship and a tanker were sunk; a number of smaller cargo ships damaged; harbour works and warehouses on Haha set on fire; and twenty-six Japanese aircraft shot down, all for the loss of six American aircraft. No U.S. warship was damaged.

On July 24 and 25, carrier aircraft bombed islands of the Pacific group, sinking a destroyer, a destroyer-escort or minelayer, an oil tanker, and seven small cargo ships. Five aircraft were lost in combat with the

enemy, but four of the pilots were picked up.

The completion of the re-occupation of strategic points along the north coast of Dutch New Guinea was reported by General MacArthur when, on July 30, American troops, covered by U.S. and Australian cruisers and R.A.A.F. aircraft, landed in the Vogelkop Peninsula near the western tip of the island. This operation isolated a Japanese garrison of 15,000 at Manokwari and left the enemy only Sorong as a last remaining base in New Guinea.

On July 5, Mr. Forrestal, U.S. Navy Secretary, announced that American submarines had sunk seventeen more Japanese ships, including a light cruiser and a destroyer. He estimated that, by then, between one-third and one-half of the 7,000,000 tons of shipping which the enemy possessed at the outbreak of war had been destroyed.

LOSSES.

An official announcement, made on July 13, gave the names of the Allied warships lost "in the operations for the liberation of Europe." They were as follows:—

British—Destroyers Boadicea and Swift. Frigates Mourne, Blackwood, and Lawford. Trawler Lord Austin. Auxiliary Minister.

United States—Destroyers Corry, Meredith, and Glennon. Destroyer-escort Rich. Transport Susan B. Anthony. Minesweeper Tide. Fleet Tug Partridge.

Norwegian—Destroyer Svenner.

The Lieutenant-Commanders in command of the Boadicea and Mourne were the only British officers lost.

Other losses reported during the month were H.M. submarine Sickle; the U.S. submarines Tullibee, Trout, and S.28., and the minesweeper Swerve.

AUGUST.

August, 1944, will be memorable for a third great landing and invasion of the Continent, this time in South France. In an announcement issued late on August 15, it was made known that throughout the previous night enemy coastal batteries, strongpoints, and supply dumps on the Riviera coast

"were deluged with thousands of tons of bombs.... At dawn, large numbers of British and U.S. parachute and airborne troops were dropped behind the landing beaches.... From 6.50 to 8 a.m., such of the enemy's coastal batteries and strongpoints as had survived the massed air assault were subjected to violent bombardment by a powerful force of Allied warships, including battleships, cruisers, destroyers, and rocket-battery barges.

"At 8 a.m., in calm and clear weather, a great armada of assault craft, preceded by minesweepers which swept the channels close inshore and covered by a great air 'umbrella,' landed powerful American, British, and French forces, who went ashore and rapidly consolidated beaches over a considerable stretch of coastline, meeting virtually no ground opposition. . . ."

An Allied naval announcement of the same date stated that the landing covered a considerable part of the coast between Nice and Marseilles, and that over eight hundred ships of all types were taking part in the operations. In addition to the strong British, French, and American naval forces, warships of the Canadian, Netherlands, Polish, Greek, and Belgian navies were present. It was also reported that 12,000 French sailors were engaged.

Subsequently it was announced that the British warships present at these operations were H.M.Ss. Ramillies—battleship; Orion, Aurora, Argonaut, Black Prince, and Royalist (flagship of Rear-Admiral Thomas Troubridge)—cruisers; Delhi, Colombo, and Caledon—A.A. cruisers; Emperor, Khedive, Attacker, Hunter, Pursuer, Searcher, and Stalker—

escort carriers; and a large number of destroyers.

French warships included in the Allied fleet were the battleship Lorraine; the cruisers Gloire, Montcalm, George Leygues, Jeanne d'Arc, and Emile Bertin; and the large contre-torpilleurs Le Fantasque, Le Malin, and Le Terrible.

On August 17, the Allied naval announcement was able to report that all coastal batteries had been silenced. In the course of the naval bombardment nearly 16,000 shells of over 5-in. calibre had been fired; and two enemy corvettes, two small craft, and three E-boats had been sunk. Naval aircraft, flying from seven British and two American carriers, attacked enemy communications and inflicted much damage on rolling stock and motor transport.

At the end of the third day of the invasion, the Allied armies were firmly holding a 50-mile strip of coastline between Toulon and Cannes,

from which they rapidly advanced and fanned out.

Following on a bombardment by Allied warships in support of French troops, the liberation of Toulon was announced on August 26. Reports from that great naval base stated that the entire docks area was completely destroyed and "a mass of twisted wreckage"; not a single harbour installation was undamaged; and both arsenals had been blown up. The battleship Strasbourg had been blasted by bombs, the wreckage of scores of other ships dotted the harbour, and ten U-boats were found sunk in their pens.

Marseilles had been entered on August 23, but mopping-up operations

continued for some days.

So, once again, a combined operation was instrumental in establishing a new front in Europe and in transporting and establishing the great armies which were to be the two arms of the pincers which would squeeze the enemy out of France and deny him the use of her ports for operating his U-boats. Special reference was made to the latter achievement in the Joint Statement on the anti-submarine war for this month. This said:

[&]quot;... due to the effectiveness of the Allied operations in France, the principal U-boat operating bases in the Bay of Biscay were neutralised. As a consequence the Germans have been forced to operate their undersea craft from Norwegian and Baltic bases, thereby stretching even thinner their difficult lines of operation. The exchange rate between merchant ships sunk and U-boats destroyed continues to be profitable to the United Nations' cause. While U-boat operations continue, they are sporadic and relatively ineffectual."



Another example of the remarkable endurance of H.M. submarines and their crews was given when the Tactician (Lieutenant-Commander A. F. Collett, D.S.C., R.N.) having returned home, it was announced that in the course of nineteen months' service in the Mediterranean and Far East she had travelled 50,000 miles. Her "bag" included a 7,000-ton armed merchantman sunk in Valona Bay and a 3,000-ton vessel laden with motor transport in Malacca Straits.

On August 10, Admiral Sir James F. Somerville, K.C.B., K.B.E., D.S.O., was reinstated on the Active List, thus repeating the precedent set when Admiral Sir Bertram Ramsay was similarly reinstated in the previous April. Admiral Somerville was placed on the Retired List just before the war on the grounds of health. His remarkable endurance and success in high commands on active service showed how unwarrantable was that decision.

Earlier in the month it was announced from Tokio that Admiral Koshiro Oikawa, a former Navy Minister, had succeeded Admiral Shimada as Chief of the Japanese Naval Staff.

HOME WATERS.

A series of attacks were made by naval aircraft from carriers under the command of Admiral Sir Henry Moore, C.-in-C. Home Fleet, against the Tirpitz and subsidiary targets in the Hammerfest area (N. Norway) on August 22, 23, 24, and 29. Hits were believed to have been made on the German battleship with large and medium bombs, but the effect could not be seen owing to the enemy's smoke screens. An A.A. vessel was blown up; a Narvik class destroyer and a tanker left ablaze; sixteen other enemy vessels, including three destroyers, a large supply ship, a U-boat and a U-boat depot-ship were severely damaged.

The attacks on the Tirpitz and subsidiary targets were carried out from a low level in face of heavy fire and at times in bad weather. The aircraft flights were commanded by Lieutenant-Commanders A. J. Temple West; B. F. Wigginton; and R. H. Richardson, who was killed in action; and Major V. B. G. Cheesman, R.M. In the course of the operations H.M.

frigate Bickerton was torpedoed and sunk.

Throughout the month there were repeated engagements with enemy light craft endeavouring to interfere with sea communications to the Allied forces in north France. Most of these took place between Cap d'Antifer and the approaches to Le Havre. During the last week of the month it was evident that the enemy was beginning to find that Le Havre was no longer a secure base, and, on August 27, it was made known that for four successive nights his armed trawlers, patrol vessels, and R-boats had been attempting to escape to safer waters. In the early hours of August 25, H.M. destroyers Retalick and Talybont, in company with British and U.S. Coastal forces, fought a series of running actions off Cap d'Antifer, when, without damage, they sank one E-boat, one R-boat, one armed trawler, and an escort vessel. Two days later it was reported that the destroyers H.M.S. Middleton and the French La Combattante, accompanied by light craft, had been engaged in a series of fierce night actions resulting in the sinking of at least six small enemy warships.

German light craft were also met and engaged off Jersey and in Dutch waters.

On August 23, it was reported that H.M. frigate Bickerton had sunk a large U-boat in the Channel and taken forty-two prisoners.

A raid on enemy shipping and shore objectives in Norway was made on August 11 by naval aircraft operating from carriers under the command of Rear-Admiral R. R. McGrigor. Bombing targets between Alesund and Kristiansund, they left storehouses and hangars ablaze and destroyed six Me. 110 aircraft on the ground for the loss of two British aircraft.

A force of Coastal Command aircraft made a successful attack on an enemy convoy in the Heligoland Bight on August 29, leaving a heavily-armed naval auxiliary, a merchant ship, and two flak vessels well on fire.

Naval bombardments on special objectives continued to be called for. On August 12, H.M.S. Rodney engaged a German battery on Alderney with her 16-in. guns at a range of 20 miles. The firing lasted for ninety-one minutes and repeated hits were obtained with an expenditure of seventy-five shells. H.M.S. Warspite took a hand in the heavy fighting still going on round Brest on August 26, when she bombarded enemy gun positions and installations. The veteran monitor Erebus, which had been mentioned several times for her useful services since D-day, was brought up to engage German batteries on the Normandy Coast at Houlgate and Bénerville which were holding up the Allied advance. Her 15-in. guns successfully silenced them by direct hits and also blew up an adjacent ammunition dump.

BALTIC.

A Russian announcement on August 21 stated that, in an engagement in Narva Bay, the Baltic Fleet had sunk four modern German destroyers. The crews had either been drowned or taken prisoners, 107 having been picked up.

ATLANTIC.

Naval activities in the Atlantic during August were mainly off the west coast of France. The American advance in Brittany was threatening the German garrisons in the ports of Brest, Lorient, and St. Nazaire, and the enemy made several attempts to withdraw them by sea. One of these attempts was completely frustrated when, in the early morning of August 6, the cruiser Bellona (Captain C. F. W. Norris) and the destroyers H.M.Ss. Ashanti and Tartar and H.M.C.Ss. Haida and Iroquois intercepted an enemy troop convoy of seven merchant ships, armed trawlers and minesweepers off St. Nazaire. In an action at close range, every ship in the convoy was sunk by gunfire. H.M. ships suffered a small number of casualties. Another convoy was met later in the same locality, but it fled back into port.

Early on August 15, H.M. cruiser Mauritius (Captain W. W. Davis) with the destroyers H.M.S. Ursa and H.M.C.S. Iroquois encountered a small convoy escorted by a destroyer and minesweeper, off La Rochelle heading for La Pallice. In a running action in the dark, which ended in La Pallice roadstead, two of the convoy were driven on shore and the destroyer, having been hit, escaped at speed. Later, another enemy convoy of two supply ships, escorted by minesweepers, was met and attacked, all four ships being driven on shore and left burning fiercely.

About a week later, the same squadron operating between Brest and Lorient, sank eight enemy vessels, including three escort ships and two M-class minesweepers. So close were they at one time to the French coast that the British ships came under the fire of the shore batteries, but they were not hit.

The U.S. Navy Department announced on August 4 that destroyer-escorts had sunk a U-boat off the Atlantic Coast of the United States and taken a number of prisoners, including the captain.

PACIFIC.

On August 10, it was announced from Admiral Nimitz's headquarters at Pearl Harbour that all organised enemy resistance on Guam had ceased and that this island, captured by the Japanese two days after the attack on Pearl Harbour, was again under American rule. The heavy toll of the enemy taken in the course of the combined operations for the capture of Guam, Saipan, and Tinian was shown by the fact that the total Japanese losses in killed amounted to 44,956 men.

The Bonin and Volcano Islands were again the targets for attack by carrier aircraft on August 3 and 4, when, for the loss of sixteen of them, five Japanese destroyers, or destroyer-escorts, five cargo ships, an oil tanker, and a number of small non-combatant vessels were sunk; a light cruiser

was probably sunk; and ground installations were wrecked.

A communiqué from General MacArthur's headquarters on August 18 gave a striking appreciation of the situation in regard to the enemy's sea communications. The Japanese, it pointed out, could no longer risk heavy shipping forward of a line Philippines-Celebes-Peram, enemy warships had practically disappeared from the waters of Dutch New Guinea, and the outlying Japanese garrisons were dependent for supplies on sailing vessels, luggers, and barges. The effect of the Allied air operations was a rapid shrinking of those sea communications, while they constituted a vital threat to Japan's Halmahera-Philippines defence line. The same communiqué reported that Allied aircraft operating from new bases in Dutch New Guinea had, in the past six weeks, destroyed or crippled nearly 50,000 tons of enemy shipping. On August 21, General Stilwell's headquarters at Chungking reported that a U.S. Liberator had sunk a 14,000-ton Japanese cruiser 100 miles east of Hong Kong with three direct hits. The ship had been seen to go down. On the same day the U.S. Navy Department announced that U.S. submarines in the Far East and Pacific had sunk nineteen more Japanese ships, including a light cruiser and escort vessel.

LOSSES.

An Admiralty announcement of August 13 made known further losses of H.M. ships in the course of the invasion operations off the Normandy coast. These were:—

Destroyers Isis and Quorn. Minesweepers Magic, Cato, and Pylades. The sinking of the U.S. destroyer-escort Fiske by a U-boat in the Atlantic was made known on August 14.

SEPTEMBER.

In a review of the war, given to Parliament by the Prime Minister on September 28 after his return from his discussions with President Roosevelt and the Combined Chiefs of Staff at Quebec, he announced that a "fine, modern British Fleet had been offered to the U.S.A. to be employed in major operations against Japan": an offer which was at once cordially accepted. A large portion of this fleet, he said, was already gathered in the Indian Ocean. For a year past "our modern battleships

had been undergoing a further measure of modernisation and tropicalisation . . . " It was hoped to place in the Pacific a fleet capable in itself

of fighting a general action with the Japanese Navy.

Some details of the part played by the Allied navies in maintaining the armies and air forces in France were made public by a senior officer on Admiral Sir Bertram Ramsay's staff. He mentioned the desperate attempts by the Germans to interrupt the sea communications, in which the enemy had used U-boats, mines, "human torpedoes," and E.M.B.s. Mines were laid so thickly that, on one occasion, one of the specially built minesweepers, known as a "Bym," exploded nineteen in a single day. The Explosive Motor-Boats were fast launches, packed with explosives which, after they had been set for their target, were abandoned by their crews who took to rubber dinghies. These and the "human torpedoes" were launched at the thick lines of shipping lying off the beaches, numbering at times three to four hundred vessels. The Navy accounted for over a hundred of these torpedoes and E.M.B.s; and, despite all the enemy's efforts, by "D+28" day, over a million men, 183,500 vehicles, and 650,000 tons of stores had been landed, notwithstanding a four-days gale in June.

An artificial or pre-fabricated harbour and a line of block ships placed so as to give some shelter off the open coast of Normandy had been invaluable in the first vital weeks of the landing, but as the Allied armies began their lightning advance through France and into Belgium the need for properly equipped ports farther up the Channel and nearer the fighting front became imperative. By the time Cherbourg had been cleared of obstructions, it was too far back to keep the head of the advance adequately supplied. The capture of Antwerp, with most of the docks and installations intact, on September 4, was, therefore, a great prize, even though the long river approach was not clear of the enemy until some little time afterwards.

By September 6 Boulogne, Calais, Dunkirk, Ostend, and Zeebrugge were isolated, and before the end of the month all of these ports, except Dunkirk, were in Allied hands. Ostend and Zeebrugge were occupied on September 10; all organised resistance in Boulogne ended on September 22; Calais was surrendered unconditionally at midnight on September 30-October 1.

From September 5 to the morning of September 12, when the great French port of Le Havre surrendered to the Canadian 1st Army, it had been subjected to a rain of over 9,500 tons of bombs, to which the battleship Warspite and the monitor Frebus had added over 500 rounds of 15-in. shell.

Another objective of the Allied armies in Northern France was the great naval port of Brest, a very important U-boat base. After a siege lasting 46 days, and during which it had sustained unmerciful bombing, Brest surrendered to the Americans on September 19. Among the large number of prisoners taken was Admiral Kähler, commanding the naval base and U-boat forces there. Details published later in the month of the U-boat pens at Brest described them as vast concrete structures easily capable of accommodating a whole flotilla of twelve ocean-going U-boats at a time. Although the city of Brest had been reduced almost to rubble by the Allies' bombing, these pens with their 12-ft. concrete roofs were nearly intact.

An official description of the Landing Craft Tank (Rocket) mentioned

that this new type of warship had been developed by Combined Operations Headquarters to provide tremendous salvoes of rocket projectiles to be fired just before troops went ashore. Each L.C.T.(R.) could fire her broadside of rockets in about 30 seconds. It was also claimed that, when aligned to fall in a small area and as related to the time over which the bombardment takes place, the effect is comparable to thirty cruisers each carrying twelve 6-in. guns or the fire of thirty regiments of artillery.

The Joint Statement on anti-submarine warfare said:

"During September there has been a lull in U-boat activity, which is possibly seasonal.... Shipping losses have been almost as low as in May, 1944—the best month of the war. The rate of destruction of U-boats in proportion to shipping losses remains satisfactory. The U-boat war, however, demands unceasing attention. Only the zeal and vigour of the Allied air and surface forces have procured the comparative safety of our shipping and the enemy's scant success."

It was officially announced (on November 5) that up to the end of September, 1944, 10,600,000 of the British Army had been moved by sea with the loss of only 2,978 lives (.0028 per cent.) by enemy action.

A significant admission was made by Admiral Saalwächter on September 16, when he broadcast a statement that German shipments of ore from Spain to ports on the S.W. coast of France had come to an end, whilst the continual threat to British shipping in the Channel by German patrol and torpedo-boats and mines had diminished. Only long-range coastal batteries were [at that date], he said, able to fight against that shipping in the Dover Strait.

One of H.M. submarines to return to her home port during the month was the Ultor (Lieutenant G. E. Hunt, D.S.O., D.S.C., R.N.). She had distinguished herself in the Mediterranean by sinking twenty-eight enemy ships, most of them strongly protected. The C.-in-C. mentioned a particular exploit as being one of the most outstanding in the war. This occurred just before the Allied landings in Southern France, when the Ultor sank a 3,300-ton merchant ship escorted by three destroyers and a corvette; an hour later she put down a 5,000-ton tanker escorted by nine surface craft and five aircraft. She then eluded fierce attacks with depth charges.

Another example of the successes achieved by British submarines was made known after H.M.S. Unruly (Lieutenant J. P. Fyfe, R.N.) had returned home. During eighteen months in the Mediterranean she had sunk or damaged more than twenty enemy ships, aggregating over 30,000 tons. On one occasion a German ship bearing the Red Cross was intercepted, but, as she was carrying a cargo of oil drums, she was obviously a supply ship and the Unruly sank her.

On September 22, it was announced by the Admiralty that Admiral Sir James Somerville had been appointed to succeed Admiral Sir Percy Noble as head of the British Admiralty Delegation, Washington.

HOME WATERS.

From the very beginning of the month there was an exodus of enemy ships and craft from the French ports threatened by the advancing armies. On the night of September 2, British and Dutch light naval forces and aircraft of the Coastal Command and Naval Air Arm fought several actions off Boulogne and Calais against escaping E- and R-boats, armed trawlers, and escort ships. The former sank at least three escort vessels and severely damaged others. The aircraft—four of which were lost—also hit several vessels and some were believed to have been sunk, but darkness

prevented this being confirmed. On September 18, it was reported that in a night action H.M. frigate Stayner and light coastal forces sank three E-boats and took a number of prisoners in an engagement off Dunkirk. A few days later the Admiralty announced that the 2nd Escort Group had recently sunk four U-boats in the approaches to the English Channel. All were put down within twelve days and a number of prisoners were taken.

It was made known on September 12 that naval aircraft of a squadron consisting of the carrier Furious, the escort-carrier Trumpeter, escorted by the cruiser Devonshire and a number of destroyers, had attacked a small convoy off Stadtlandet (Norway), sinking an escort-minesweeper and damaging all the remaining vessels, which were seen to be stopped. The squadron was under the command of Captain G. T. Philip, D.S.O., D.S.C., R.N., of the Furious.

The series of attacks made by naval aircraft during the latter part of August on the Tirpitz having failed to sink or seriously disable the ship, it was the turn of the Royal Air Force, and, on September 15, shortly after noon, a force of Lancasters without fighter cover made a surprise assault on her with 12,000-lb. bombs, in Kaa Fjord—an extension of Altenfjord. There was excellent visibility, but the effect of the bombing could not be seen owing to the intense white smoke screens put up by the enemy Subsequently it was apparent that the Tirpitz had survived this, the sixth of a succession of bombing and under-water attacks made against her while anchored in Norwegian waters.

BALTIC.

With the Soviet army pressing on in the direction of Riga, the enemy was trying to withdraw some of his forces by sea. On September 29, the Red Air Force caught and sank three transports laden with German troops from Latvia and Estonia.

MEDITERRANEAN.

A dramatic event was the formal return of the French fleet to Toulon on September 15. Admiral Lemonnier, Chief of Naval Staff, was on board the cruiser Georges Leygues, which was followed into harbour by the battleship Lorraine and eight cruisers and destroyers. They were accompanied by the British cruiser Sirius flying the flag of Admiral Sir John Cunningham, Allied C.-in-C. Naval Forces, Mediterranean, and the U.S. cruiser Philadelphia, flying the flag of Admiral Davidson.

Earlier in the month Allied warships had been active off the French Riviera. On September 3, a U.S. cruiser and destroyers had bombarded enemy batteries in the Monte Carlo area, whereupon the small German garrison had fled to the hills. The following day the U.S. destroyer Ludlow fired 366 rounds against enemy positions still holding out between Monaco and Cap Martin.

An encounter in the Gulf of Genoa between Allied light coastal forces and a large group of German "F" lighters, escorted by two destroyers, on the night of September 13, led to a big explosion amongst the lighters and one of the destroyers being torpedoed and left on fire and sinking. The Allied craft withdrew undamaged. The enemy was seen to be in confusion with his ships firing at each other, several hits being observed. In the course of another attack on a convoy in the same waters on the night of September 17–18, two more "F" lighters were sunk.

On the same dates U.S. destroyers bombarded enemy targets in the San Remo area. On September 18, the Hilary P. Jones made a particularly successful attack on that port, sinking shipping, blowing up ammunition

dumps, and setting fire to fuel storage tanks.

Throughout the greater part of the month British warships repeatedly bombarded the vicinity of Rimini, on the Adriatic coast. Here the enemy was fiercely resisting the advance of the 8th Army into the Plain of Lombardy. The ships which took part in these operations included H.M. destroyers Loyal, Urchin, and Undine, also the gun-boats Aphis and Scarab. Rimini was eventually captured on September 21.

At the eastern end of the Mediterranean increased attention was paid by the Allies during this month to Crete, where the position of the German garrison had become precarious—one of many illustrations in this war of the futility of occupying islands unless they are to serve as naval and air bases to consolidate and extend sea communications or to threaten those of an adversary. Crete, from being an asset, had, by the middle of September, become a distinct liability to the Germans, and on September 20 Allied H.Q. in the Mediterranean announced that the island was being closely blockaded to prevent the escape of the garrison. About this time, too, carrier-borne aircraft were making a series of bombing raids on enemy motor transport in Crete. Melos Island—80 miles to the northward—was also bombed by naval aircraft and bombarded by H.M.S. Aurora.

British destroyers were active in the Ægean, and on the night of September 12–13 they sank an enemy convoy of several vessels escorted by two small armed ships. Another convoy of five craft was destroyed on the night of September 24–25 by H.M.Ss. Terpsichore and Termagant, also in those waters. On September 29, the cruiser Black Prince and the destroyer Tumult bombarded the harbour of Syros, sinking five "F" lighters and damaging shore installations.

BLACK SEA.

A German naval broadcast announced on September 9 that, Roumania and Bulgaria having declared war on Germany, the last naval bases in the Black Sea had been lost. The crews had therefore scuttled their ships to prevent their falling into the Allies' hands, and "German naval warfare against the Soviet forces in the Black Sea has thus come to an end."

INDIAN OCEAN.

Enemy shipping to the south of Rangoon was successfully attacked by rocket-firing Beaufighters of the R.A.F. in a series of twenty-one attacks spread over a period of 33 hours from dawn on September 9. During these operations, without any aircraft casualties, hits were scored on fourteen Japanese merchant vessels, two sloops, and a gun-boat, many being left ablaze and capsized. On September 18 carrier aircraft of the Eastern Fleet, under the command of Rear-Admiral Moody, made what was described as a heavy night attack on the rail repair and maintenance centre of Sigli in N.E. Sumatra. Good results were observed.

The names of ten submarine commanders were mentioned in an Admiralty announcement of September 28, in referring to their successes in sinking, during recent operations in the Far East, 32 Japanese ships ranging from medium-sized supply ships to small coastal craft; four more were damaged, three of them being driven ashore. This "bag" also included the sinking by gunfire of two gun-boats at anchor in Port

Owen (south Burma); in this case the submarine entered in the face of heavy machine-gun fire.

PACIFIC.

September 15 must go down through history as the date of two great achievements perfectly synchronised by two great American strategists. On that day Admiral Nimitz's skilfully planned advance across the Pacific from Pearl Harbour, via the Gilbert Islands, the Marshalls—bypassing the Carolines—to the Marianas, having turned south, reached Peleliu in the Palau Islands. On the very same day, General MacArthur's vanguard landed at Morotai in the Halmahera Group—the culmination of his steady progress up the north coast of New Guinea, mopping up enemy positions in that country and in the Solomons, Bismarck Archipelago, and Admiralty Islands. The significance of these simultaneous arrivals lay in the fact that they constituted a direct and dual threat to the Philippines from which Peleliu was less than 500 and Morotai less than 300 miles The Palau Islands were also of great strategical importance because they commanded the sea and air routes from China and Japan to New Guinea and the Netherland Indies to the west; they were also the last big Japanese stronghold in the Central Pacific. The value of Morotai was explained by General MacArthur, who personally commanded the landing. We shall soon have an air and naval base here, he said, and added that they had cut the enemy's Halmahera-Philippines line, were threatening with envelopment his conquests to the south of that line, had isolated garrisons in the Netherlands East Indies estimated at nearly 200,000, and were interrupting the vital supply of oil and other essential war materials to the Japanese mainland.

The softening-up process which prefaced the landing on Peleliu had already begun when, on September 6, U.S. carrier aircraft made another attack on the Palau group, leaving seventeen small vessels ablaze, wrecking grounded aircraft and setting fire to warehouses. Four days later this bombing was repeated with the addition of a bombardment by battleships and cruisers. The landing operations were under the command of Vice-Admiral Wilkinson, U.S.N., commanding the 3rd Amphibious Force, and of Major-General Julian Smith, U.S. Marines. It was made under cover of a bombardment by carrier aircraft and warships of Admiral Halsey's 3rd Fleet, including some of the newest battleships. American Marines, supported by artillery and tanks, at once established a firm foothold and captured the Peleliu airfield despite savage enemy opposition.

General MacArthur's approach to Morotai had also taken the form of a sustained series of bombing attacks for over a week, aimed at neutralising enemy air bases from Celebes to the Kai Islands. On September 12 Halmahera, the main island of the Group, was bombed by large forces of U.S. land-based aircraft, and the enemy was completely taken by surprise when, under cover of what was described as "a tremendous naval and air bombardment," the landing was made on the much smaller island to the north. In doing this, MacArthur was repeating the strategy he had employed so successfully in the previous April when, by leap-frogging into Hollandia, he had isolated the Japanese 18th Army, just as he had now isolated the large garrison in Halmahera.

The achievement of Admiral Nimitz's fleet, with its armada of landing and supply craft, in fighting a way across some 5,000 miles of the Pacific without a single prepared base was very remarkable and destroyed a long-established theory that such strategy was unsound. It was made possible mainly by the use of carrier aircraft in large numbers to blast the way into suitable anchorages, and by the provision of specially designed and equipped base ships to carry out repairs, and store spare parts and supplies for every class of warship. The whole of this great move was accomplished between November, 1943 and September, 1944; with its completion the stage was set for the major operations against the Philippines which were to follow next month.

That next main objective was, however, already being subjected to bombing attacks by carrier aircraft which were carried out against selected islands of the group on September 11, when over 50 Japanese aircraft were destroyed in the air and 150 on the ground; on September 18, when Liberators dropped 120 tons on installations at Davao (Mindanao; on September 19, when targets in the Manila area were attacked; and on September 20, when the naval base at Cavite (just south of Manila) and the neighbouring airfields suffered severely. In this last operation, the damage inflicted included the destruction in the air of 110 enemy aircraft and on the ground of 95; 11 ships, including a large destroyerleader, were sunk, and 26 others, including 2 destroyers damaged, all for the loss of only 15 U.S. aircraft. No American ship was damaged. September 23 carrier aircraft made yet another attack, this time on the central (Visayan) Philippines, sinking 22 Japanese ships, including a destroyer and 3 destroyer-escorts, and damaging 43 more of which 15 were probably sunk.

Summarising the damage inflicted by the 3rd Fleet in the Western Pacific, Admiral Nimitz stated, on September 19, that it included 122 Japanese ships and 61 small craft sunk; 137 ships and 109 small craft damaged, and 970 aircraft destroyed, besides damage to airfields and naval establishments. This had cost 51 American aircraft, 37 pilots, and 20 other airmen. The enemy, said the report, had been forced to withdraw his naval forces from their former anchorage in the Philippines and to seek new refuges in the same general area; his inter-island communications

had been disrupted, and his air force in the Philippines broken.

On the night of September 18 bombers of the U.S.A.A.F., operating from China, attacked an enemy convoy in the Formosa Straits, sinking 14,200 tons of Japanese shipping. This brought the score of that air force for the month up to date to 74,600 tons, not counting a cruiser and

destroyer.

An announcement from the Navy Department on September 11 made known that U.S. submarines in the Pacific and Far East had sunk nine enemy ships, including a destroyer, an escort vessel, and a gun-boat. A further announcement, on September 19, said that they had sunk twentynine more Japanese vessels in the Pacific, including two destroyers. This brought the total of Japanese ships sunk since Pearl Harbour up to 761.

LOSSES.

The loss of H.M.C.S. Alberni—corvette—with fifty-nine officers and men was announced in Ottawa on September 5.

On September 25 the loss of the corvette Hurst Castle was made known.

U.S. losses were :—

Destroyer Warrington (sunk with four smaller vessels in a hurricane in the Atlantic on September 14, with the loss from all five ships of 344 men). Submarines Robalo, Gudgeon, and Flier.



OCTOBER.

In a Trafalgar Day speech, the First Lord of the Admiralty made known that the large British Fleet, which the Prime Minister had said three weeks before they hoped to place in the Pacific, was in fact on its way to the Far East. No details of its composition were given, but it was evident that the situation in Home Waters and the Mediterranean had undergone such a change that it was no longer necessary for a strong battle fleet to be maintained in either command, and therefore big ships had become available for the new force. Mr. Churchill had also mentioned that this Fleet would be accompanied by a large fleet train of auxiliary vessels to enable it to be largely independent of shore bases.

The Joint Statement on the anti-submarine war for this month said:

"The scope of U-boat activities in October was materially below that of any other month of the war. . . . Although the number of U-boats destroyed was less than what has come to be considered a good monthly 'bag,' it compares very favourably with the number of Allied merchant vessels sunk by U-boats. The Allies continue to supply on schedule their ever-growing armies in Europe."

Striking proof of the extent to which the enemy's submarine campaign had been mastered was given by the fact, referred to by the First Lord in the speech already mentioned, that the largest supply convoy in history had crossed the Atlantic from North America in 17 days and arrived safely in Britain. This had been composed of 167 ships, loaded with over 1,000,000 tons of cargo, and covering an area of nearly 26 square miles. Rear-Admiral Sir A. T. Tillard had been Commodore in command. He had been assisted by the Vice-Commodore—Vice-Admiral Sir R. H. O. Lane-Poole, and the Rear-Commodores—two Merchant Navy captains, B. W. Blair and J. Erret. The escort had been provided by the Royal Canadian Navy and had been under the command of Commander G. H. Stephen, R.C.N.R., in the frigate H.M.C.S. Dunver.

On October 10, General Eisenhower issued a warning that any vessel, of whatever size or character, sailing in Norwegian waters did so at her own risk.

"... U-boats driven from their bases in the Bay of Biscay carry out their operations from Norwegian ports," said this announcement. "The Germans are returning from Norway every man that can be spared from garrison duties to defend Germany, and only with difficulty are they sending supplies to their garrisons. Germany's shipping resources are most seriously reduced, and the German military authorities are compelled to employ every available craft of every size to meet the military requirements in Norway ... In view of the high importance of cutting the sea communications between Norway and Germany at the present critical stage of operations, all shipping must be attacked off the Norwegian coast."

This warning was followed by vigorous action, and convoys and shipping in those waters were repeatedly attacked by carrier aircraft, submarines, or Coastal Command, and a number of enemy vessels sunk or damaged.

The battleship Tirpitz, which had been moved to a new anchorage near Tromso, after the R.A.F. attack on September 15, was again bombed on October 29. It had become imperative to move the ship in order to avoid capture by the advancing Russians, and it was probable that an attempt was being made to get her back to a German port for repairs. In this new attack one direct hit with a 12,000 lb. bomb and a number of "near misses" were observed; but the ship remained afloat.

An Admiralty and Air Ministry joint communiqué on October 17 referred to the successful results of minelaying operations in enemy waters by the Navy and Bomber Command in conjunction with the landings in

Normandy. Special types of mines had been used and as a result over a hundred enemy warships, auxiliaries, and merchant vessels had probably been sunk or severely damaged. This had made a direct and valuable contribution to the enterprise as a whole.

The names of fifteen commanders of British submarines were mentioned in an Admiralty announcement of successes for which they had been responsible in operations extending from the Arctic Circle to the Ægean, in the course of which 37 enemy ships (33 supply ships, 3 naval auxiliaries, and an R-boat) had been sunk and 13 others damaged. Several of the supply ships sunk were in strongly-escorted convoys off Norway.

Some details of a new and important device to enable carrier aircraft to take off in light winds and with heavier loads were made known during the month. This was a rocket-propulsion unit with a cordite charge, attached to the aircraft and fired at a certain point in the take-off to give additional acceleration lasting about 4 seconds after which it was jettisoned.

It was also made public that seven sea forts had been built in the Thames Estuary during the war to assist in keeping off enemy aircraft attempting to lay mines in the approaches to the Port of London. Each fort was mounted on concrete stilts 50 feet above water and consisted of seven steel towers armed with 3.7-in. A.A. and Bofors guns, and lighter weapons. Four of them—Roughs, Sunk Head, Tongue Sand, and Knock John were manned by the Royal Navy; three—Great Nore, Red Sand, and Shivering Sand, by the Army.

HOME WATERS

Since the capture or investment by the Allies of the French Atlantic ports, Bergen, in Norway, had become the main U-boat base. On the morning of October 4 this was attacked by Bomber Command; one floating dock was sunk and another partially sunk, four U-boats damaged, submarine pens and machine shops hit, and large fires started. One Lancaster was lost.

British light coastal forces were engaged with light enemy forces off the coast of Holland on October 1 and 9, inflicting damage on supply ships on the first date and on patrol craft on the second without loss to themselves.

It was announced during the month that H.M.S. Jamaica (Captain J. Hughes-Hallett, R.N.) had escorted a small expedition taking winter supplies and reliefs to the Norwegian garrison in Spitzbergen.

ATLANTIC.

An agreement between Brazil and the United States was published in Rio de Janeiro on October 11, under which the Brazilian navy was to assume entire responsibility for patrolling the South Atlantic in order to free more U.S. warships for service in the Pacific.

MEDITERRANEAN.

A significant event, marking the Allies' complete mastery of the Western Mediterranean, was the lifting of all remaining black-out precautions at Malta on October 3.

In the Eastern Mediterranean the Royal Navy played an active part in a number of operations to free occupied territory. Most important of these was the landing on the mainland of Greece of units of Land Forces Adriatic on the night of October 4-5. A few days before paratroops had been dropped and an airfield occupied without opposition. On entering Patras, the Allies found the port serviceable, the German garrison of some 1,500 having withdrawn so hurriedly that the demolition charges were not fired. The enemy had embarked in Siebel ferries and other small craft and escaped under cover of darkness. On October 14 it was announced from Allied Headquarters, Mediterranean, that on the previous day a British Commando force led by Colonel Earl Jellicoe (son of the former Commander-in-Chief of the Grand Fleet), and conveyed in British and Greek warships, had liberated Athens and the Piræus. The following day a British and Greek naval force under the command of Rear-Admiral Mansfield, and which included the cruisers Ajax, Aurora, Orion, and Black Prince, and a number of destroyers and other warships, dropped anchor off the Piræus, bringing with them Greek troops, stores, and equipment.

On October 12, British landing craft and a motor launch entered Corfu harbour, whereupon the few remaining German troops surrendered; so once again history repeated itself and a British garrison was in occupation of the island. The Albanian port of Saranda, opposite Corfu, was attacked on October 9 by Land Forces Adriatic supported by the guns of the destroyers Belvoir and Wilton and two days later had fallen. A military force was landed by the Navy in Lemnos on October 16, and after slight resistance occupied the town of Mudros with its fine harbour, famous as the main base for the Gallipoli Campaign in the 1914-18 war. In Scarpanto one of the Dodecanese Islands—the German garrison had been contained by the Greek population, and when a naval party from the destroyers Terpsichore and Cleveland landed on October 17 and occupied it in the name of the United Nations, they received an enthusiastic welcome. Santorin Island (Thira) in the Ægean surrendered to H.M.S. Ajax on October 18. On October 23, troops landed from the destroyer Teazer and the Greek destroyer Navarino occupied the island of Skopelos, east of the Gulf of Volos. A few days later H.M.S. Sirius landed a small force to occupy Piskopi (Tilos) Island, north-west of Rhodes.

Earlier in the month the Maleme airfield in Crete was bombarded by H.M.S. Aurora; and naval aircraft from escort carriers under Rear-Admiral Troubridge bombed targets on Leros and Levithia. The island of Milos came in for special attention on October 26, when it was bombarded by the cruiser Aurora, the escort carrier Emperor, and the destroyers Tyrian and Tetcott. On October 28 and 29, it was again bombarded by the Aurora. A night engagement between H.M. destroyers Termagant and Tuscan with an Italian destroyer intercepted near the entrance to the Gulf of Salonika resulted in the enemy being driven ashore and destroyed.

INDIAN OCEAN.

Successful operations on an extensive scale were carried out between October 15 and 17 against the Nicobar Islands, which the enemy was using as a base for his sea and air communications. The Eastern Fleet, including battleships, cruisers, and escort carriers, under Vice-Admiral Sir John Power, attacked selected targets with gunfire and bombs.

The operations began on October 15 with a 2½-hour bombardment of Car Nicobar—the most northerly island. They took the enemy by surprise and met with no opposition. Carrier aircraft synchronised their attacks with the bombardment and dealt with A.A. gun positions, airfields, and constructional machinery. The small port at Nancowry Island (Central

Nicobars) was also bombed and a medium-sized ship sunk, smaller ships damaged, and fires started. Car Nicobar was again bombarded at night. These operations were repeated two days later. On this occasion the enemy was more on the alert and twelve Japanese aircraft tried to intercept the British aircraft on their return. At least eight Japanese fighters were shot down and further attempts by the enemy to interfere with the Fleet's movements equally failed. No damage or casualties were sustained by the warships; one naval bomber and three naval fighters were lost.

In his Trafalgar Day speech, the First Lord of the Admiralty made known that British submarines in Far Eastern waters during the past few months had sunk one Japanese cruiser of the Kuma class; five large, nine medium-sized, and nine small supply ships; sixty small supply craft and naval auxiliary vessels; and had probably sunk a 7,000-ton aircraft carrier,

and torpedoed another Japanese cruiser.

PACIFIC.

The chief events of the month in the South-West Pacific were the landing in the heart of the Philippines and a great naval and air battle against the Japanese fleet which attempted to intervene.

A special communiqué issued by General MacArthur, C.-in-C. S.W. Pacific on October 20, said:

"In a major amphibious operation we have seized the eastern coast of Leyte Island. . . . This point of entry in the Visayas is midway between Luzon and Mindanao and at one stroke has split in two the Japanese forces in the Philippines. The enemy's anticipation of attack in Mindanao enabled him to be caught unawares in Leyte. The landing was preceded by heavy naval and air bombardment, which was devastating in its effect. . . . Naval forces consisted of the U.S. 7th Fleet with an Australian squadron and supporting elements of the U.S. Fleet. Air support was given by Navy carrier forces, by the Far East Air Force, and by the R.A.A.F. . . . "

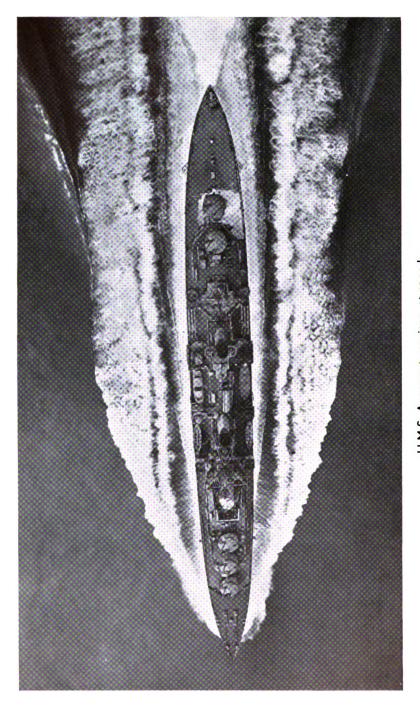
This operation, the communiqué remarked, was the greatest amphibious expedition of the Pacific war, second only to the Normandy landings. The huge convoys had been assembled secretly in dozens of forward bases in the Central and S.W. Pacific. The naval forces which escorted the transports included U.S. battleships. The Australian squadron taking part was under the command of Commodore John A. Collins and consisted of the cruisers, H.M.A.Ss. Australia and Shropshire, and the Tribal class destroyers Arunta and Warramunga, also the former Australian passenger ships Kanimbla, Manoova, and Westralia which had been converted into landing ships. In the course of the bombardment of Leyte on October 20 the Australia was damaged by a Japanese bomber crashing on her bridge; Captain E. F. V. Dechaineux, R.A.N., and 18 of his ships' company were killed and Commodore J. A. Collins, commanding the squadron, and 53 others were wounded.

Little enemy resistance was met with by the landing force at the initial stages of the operations, and the airfields of Tacloban and Dulag were captured the next day. These helped the Allies to secure command of the air over the whole of the Philippines and to threaten the Japanese convoys going through the China Seas to Singapore and the East Indies.

Before the landing, U.S. carrier-borne aircraft had on October 18 and 19 bombed enemy airfields and shipping, ranging over Cebu, Panay, Negros, and Leyte, destroying eighty aircraft on the ground and four in the air, and sinking and damaging a number of Japanese merchant vessels, transports, barges, and light naval craft.



British submarine in action on the surface in the Indian Ocean. (British official photograph. Crown copyright reserved.)



H.M.S. Argonaut, cruiser, at speed. (British official photograph. Crown copyright reserved.)

The occupation of the Philippines by the Allies, which the landing in Leyte portended, could only mean a major disaster for the Japanese; for, as General MacArthur put it, their "Greater East Asia co-prosperity sphere" would be severed in half; 500,000 men of their armies in the conquered islands and atolls to the south would be cut off with the certainty of their ultimate destruction; and the strategic defensive line of Japan herself would be pierced. The situation called for desperate measures to smash the Allies' transports, and the supporting naval forces, and to enable the Philippine garrison to throw the invader out before it was too late. So the greater part of the Japanese fleet was committed to this task. Whether the strategical situation justified it or not may be a subject for much future argument; but the fact remains that the enemy decided to attack from three different directions, and in so doing broke a cardinal principle of war by dividing his forces, with the result that each was defeated in turn.

Contact was made with part of the Japanese Fleet on October 21–22, when U.S. submarines sighted it in the Singapore area moving in a north-easterly direction. The American underwater craft attacked, sank two heavy cruisers of the Atago class and severely damaged a third.

In the morning of October 23, U.S. carrier aircraft reported two strong forces approaching from the west—one through the Sibuyan Sea, the other through the Sulu Sea. In the afternoon naval aircraft also sighted the third force 200 miles off Cape Engano, North Luzon, heading south. It was subsequently established that these forces included the following warships:—

Sibuyan Sea Force.

BATTLESHIPS:

2 of the new 45,000-ton class.

Nagato (32,720 tons).

Haruna and Kongo (29,330 tons).

CRUISERS:

2 Mogami class (8,500 tons).

2 Tone class (8,500 tons).

2 Nati class (10,000 tons).

1 Atago class (9,850 tons).

1 Noshiro class.

DESTROYERS: 13.

Sulu Sea Force.

Battleships: Huso and Yamashiro (29,380 tons).

CRUISERS: 2 heavy; 2 light.

DESTROYERS: 7 or 8.

Northern Force.

Battleships: 2 Ise class (30,000 tons), fitted with flying decks.

CARRIERS:

1 large, Zuikaku class (20,000 tons).

3 light, Ghitose and Zuiho class.

CRUISERS:

1 heavy, Mogami class.

2 Kiso class (5,100 tons).

1 light, Nashiro class.

DESTROYERS: 6.

5

Details of the Allied naval forces have not been made public, but, after the battle, Admiral Nimitz's communiqué mentioned that among the U.S. warships which took part were the battleships West Virginia and Maryland (33,590 tons), Tennesse and California (35,190 tons), and Pennsylvania (33,100 tons); also the new aircraft carriers Lexington, Wasp, and Hornet. On October 22, the U.S. Third Fleet took up positions east of the Surigao and San Bernardino Straits—the two passages through the Philippines, south and north of Leyte; part of it was also farther north, off the Polillo Islands, to the east of Luzon. The U.S. Seventh Fleet was operating in close support of the landing in the Leyte Gulf, opening off the Surigao Strait.

It will be noticed that neither of the Japanese forces approaching from the west had aircraft carriers, and it is evident that they relied for air cover and support on shore-based aircraft. The opening phase of the battle, on the morning of October 23, took the form of attacks by U.S. naval aircraft on these two enemy squadrons, and attempts by the Japanese air force to bomb Admiral Halsey's carriers. In the Sibuyan Sea, one Japanese battleship and one cruiser were severely damaged—perhaps sunk; three battleships and three heavy cruisers hit by bombs and torpedoes; and one light cruiser sunk. In the Sulu Sea, hits were scored on one of the Japanese battleships; the enemy also lost 150 aircraft. His attacks with landbased aircraft had no comparable successes, their only victim being the U.S. carrier Princetown (10,000 tons), which was so severely damaged that she had to be sunk. Eight American aircraft were also lost.

Despite the discouraging results of this first round, both enemy forces held on their course, and during the night of October 23-24 one passed through the San Bernardino Strait and the other entered the Surigao Strait. Up to now the battle had been confined to engagements between ships and aircraft; but as the Sulu Sea force approached the Gulf of Leyte in the dark, and so directly threatened the whole mass of transports and craft engaged in the landing, it was met by Admiral Kincaid's Seventh Fleet. In the night action which followed it suffered complete defeat: one, if not both battleships, several cruisers, and most of the destroyers were sunk; the remainder turned back and made for the Sulu Sea; but the following day they were sunk to the last ship. The American losses were only some P.T. boats (M.T.B.'s) sunk and a destroyer damaged.

Meanwhile Admiral Halsey had collected a carrier force which, supported by units of his Third Fleet, moved north during the night to engage the third Japanese squadron at dawn on October 24. This attack took the enemy completely by surprise. Naval aircraft sank the large carrier and two smaller ones and a destroyer; the third small carrier and a cruiser were crippled, the latter being sunk by an American submarine the following night. The carrier and another cruiser were sunk by gunfire. Both the Japanese battleships were hit by bombs, and one by torpedoes as well; and the other cruisers and destroyers were damaged by bombs and gunfire. Not a single American ship was injured.

The sorely battered enemy retreated to the northward; but action had to be broken off because Admiral Halsey's force was by now urgently needed to go to the assistance of the carrier groups of the Seventh Fleet which were being attacked off Samor Island by the Japanese squadron which had got through the San Bernardino Strait. Two American escort carriers had already been sunk by gunfire when this last remaining enemy force was brought to action by the now united U.S. Fleets. In this, the

third, phase of the battle—fought later on October 24—most of the Japanese heavy ships were badly damaged; a Mogami class cruiser was sunk; and a destroyer left adrift. This enemy force, too, retreated in the direction from which it came. But it was not yet out of trouble. Although it got back through the San Bernardino Strait during the night, it was still within range of the American aircraft which attacked it repeatedly as it tried to escape to the westward. A Mogami class cruiser and a Noshiro class cruiser were sunk off Mindoro Island; a battleship was probably sunk; and three battleships and three cruisers were damaged. The loss of the U.S. submarines Herring and Golet was published on October 23.

The full toll of enemy casualties between October 22 and 27, as reported

in official statements issued by Admiral Nimitz was :-

Sunk—Battleships Fuso and Yamashiro; 4 aircraft carriers; 6 heavy cruisers; 2 light cruisers and an undetermined number of destroyers.

Severely damaged (some probably sunk)—1 battleship; 3 heavy cruisers;

2 light cruisers; 7 destroyers.

Escaped in damaged condition—6 battleships; 4 heavy cruisers; 1 light cruiser; 10 destroyers.

The American casualties given in the same communiques were the aircraft carrier Princeton, 2 escort carriers the Cambier Bay and the St. Lô, 2 destroyers, 1 destroyer escort, and a few small craft. In the light of these figures, history will not quarrel with Admiral Nimitz's verdict on the Battle of the Philippines: "The Japanese Fleet has suffered a crushing defeat, and the U.S. Navy has won an overwhelming victory." Most important of all, as a direct result, was the fact that the landing in Leyte thenceforward continued without further threat of interruption at sea. By October 30, General MacArthur was able to announce that all organised resistance on Leyte had ended apart from isolated enemy pockets; nearly all the island of Samar had also been freed

Meanwhile, mopping up operations had continued in the Palau group, and on October 8, Garakayo, the tenth of these islands, was occupied.

The next day a strong force of the U.S. Third Fleet attacked the Ryukyu (Liu-Chu) Islands—to the south-west of Japan. The enemy was completely surprised, and 12 of his ships, including a destroyer, a mine-sweeper, and a submarine tender, were sunk; 14 merchant vessels probably sunk; 12 others, including a destroyer, damaged; and over 20 small craft sunk or damaged. The U.S. naval aircraft accounted for 89 enemy aircraft with only light losses to themselves. U.S. warships suffered no damage.

Formosa was the scene of a succession of attacks by carrier aircraft between October 11 and 13. On the first day 221 enemy aircraft were destroyed, including 11 during a night attack on the U.S. carriers; also 53 Japanese ships were sunk or damaged; 19 damaged; and 68 small craft sunk or damaged. On October 12, another 175 enemy aircraft were destroyed, 11 ships sunk, 14 probably sunk, and 6 more damaged. In the afternoon of October 13, after further destruction had been inflicted by U.S. naval aircraft, a determined attack was made by Japanese aircraft on the American warships. Subsequently the most fantastic claims were made by Imperial Headquarters which alleged that the Japanese Fleet

¹ It was officially reported some months later that the new 45,000-ton battleship Mussahi had been sunk, and a sister ship, the Yamato, damaged in this action.

had been in action, had inflicted severe losses on Admiral Halsey's Fleet and was pursuing it in an attempt to deal an annihilating blow. A few days later Admiral Nimitz disposed of these wild claims, and reported that no damage of consequence had been suffered by the U.S. battleships or carriers in these air attacks; two medium-sized ships had been hit by aircraft torpedoes and had had to withdraw. The Japanese Fleet had made off as soon as the strength of the force opposing it was realised. The same communiqué added that during day and night attacks on the U.S. Fleet between October 13 and 15, 95 enemy aircraft had been shot down. The total enemy losses during the Ryukyu-Formosa-Luzon attacks had been 915 aircraft.

A single aircraft of the 14th U.S.A.A.F. attacked an enemy convoy with two cruisers and four destroyers in the approaches to Formosa, sinking a cruiser of the Natori class, by direct hits which blew up the magazine, and also one of the destroyers.

On October 16, in a broadcast, Admiral Nimitz said that within the past week forces under the command had sunk 73 Japanese ships and destroyed 670 aircraft. These totals included the products of a number of attacks on targets in the Philippines, including Manila. During the week-end, October 28-29, carrier aircraft badly damaged and probably sank a Japanese heavy cruiser in Manila harbour and damaged another; and hit a third cruiser off Cavite.

In a statement by the U.S. Navy Department on October 18, it was mentioned that American submarines in the Pacific had sunk 33 more Japanese ships, including 3 destroyers, 3 escort ships, a minelayer, and 8 transports, bringing the total sinkings of enemy vessels since Pearl Harbour up to 956. Amongst these sinkings was a Japanese transport with American prisoners of war, who were being taken from the penal colony at Darao, following on the fall of Bataan and Corregidor. Many of these prisoners went down in the ship; others were shot by the Japanese guards as they were swimming ashore; and some were murdered on the beaches. Eighty-three survivors, who had been sheltered by the Filipino partisans, were eventually rescued by U.S. submarines and aircraft and taken to New Guinea.

LOSSES.

On October 9, the Admiralty announced the following further losses in connection with the operations for the liberation of Europe:—

Minesweepers Loyalty, Britomart, and Hussar. Trawler Gairsay.

Auxiliary vessel Fratton.

The following day the loss of H.M. destroyer Rockingham was made known.

NOVEMBER.

The Joint Statement on the war against U-boats during this month read

"Shipping losses from U-boat action have again been very small, and the number of U-boats sunk in proportion has again been satisfactory. The enemy has by no means abandoned the struggle, and has introduced new devices, such as the extensible air intake and exhaust, which enable U-boats to remain submerged for long periods and so penetrate into areas denied to them for the past three years . . . improved types of U-boats may at any time be thrown into the battle, and retention of our present command of the sea will undoubtedly call for unremitting vigilance and hard fighting."



A particularly gallant landing operation was that carried out on November 1 by Royal Marine Commandos and naval landing craft, under cover of the fire of warships, when a firm foothold was secured against strong resistance at Westkapelle. This was part of a combined assault on the Island of Walcheren designed to drive the enemy from the banks of the Scheldt and so clear the way into Antwerp. The attack on Westkapelle was intended to synchronise with a landing by the Canadian Army at Flushing, and with a thrust into Walcheren along the South Beveland causeway. The two latter assaults could be made under cover of land artillery; the Flushing force being ferried from Breskens on the south bank of the Scheldt immediately opposite its objective. The Westkapelle force had to be brought by sea from Ostend.

Conditions were such that, it was obvious, there could be little or no air support; nevertheless, Admiral Ramsay and Lieut.-General Simonds—commanding the Canadian 1st Army—decided that the force should sail and it should be left to the commanding officers on the spot—Captain A. F. Fagaley, R.N., and Brigadier B. W. Leicester, R.M.—to decide whether to proceed with the attack. In spite of the unfavourable conditions for his commandos, the Brigadier decided to land. Covering fire, but without air spotting, was provided by the battleship Warspite, the monitors Erebus and Roberts, and a "gun support squadron" of converted landing craft under Commander K. A. Sellar, R.N.; and three and a half hours after the Flushing force had got ashore without casualties, the Westkapelle force went in, to be met by heavy fire from powerful coastal batteries.

In a statement, describing the landing, made by the First Lord of the Admiralty on November 15, he said:

"The gun support squadron . . . manned by bluejackets and marines . . . engaged the enemy batteries with the greatest gallantry from point-blank range while the tank landing craft disembarked the R.M. Commandos and their vehicles They could only beach two at a time in the gap torn in the Westkapelle dyke by the R.A.F., but through the gallantry of the gun-supporting squadron in attracting most of the enemy's heavy fire, the Commandos went ashore without heavy casualties. Once ashore, however, very bitter resistance was met; but all objectives were eventually attained after a heroic battle."

The First Lord also stated that of the twenty-five support craft engaged, nine were sunk, eight damaged, 172 of their crews killed, and 200 wounded. Of the forty-seven other major landing craft engaged, four were sunk, and others damaged. Casualties in these craft and in the attack on Flushing were 21 killed and missing and 81 wounded. The Royal Marine Commandos lost 37 killed, 77 missing, and 201 wounded. Except for some pockets of resistance in the dock area, Flushing was clear of the enemy by November 4. Domberg, the main centre of the heavy batteries, which had been denying the Allies the use of Antwerp, fell to the R.M. Commandos the previous day. Middelburg, the last important German strongpoint in Walcheren, was occupied with little resistance, on November 7 by British and Canadian infantry who entered the town in a fleet of assault craft, most of the streets being four feet under water. By November 9, practically all resistance on Walcheren was at an end.

A dramatic event was the sinking of the Tirpitz by R.A.F. bombers on November 12. The German battleship was lying in Tromsö Fjord when, at 10.30 a.m., she was attacked by twenty-nine Lancasters in two waves. Each aircraft carried a 12,000 lb. bomb. They pressed home their attack in clear weather and were unimpeded by smoke screens. Three direct hits in quick succession were scored on the Tirpitz—amidships,

in the bows, and towards the stern, also several very near misses. Great explosions were observed, the ship caught fire, and at 10.45 a.m., rolled over and sank in shallow water. Subsequent air photographs showed that the Tirpitz had completely capsized, and some 700 ft. of her keel was projecting above water. Only one Lancaster failed to return, but the crew landed safely in Sweden.

The Tirpitz had been the target for nine attacks while she had been in Northern waters: (1) by the Naval Air Arm near Narvik in March, 1942; (2) by the R.A.F., when she was moored under a precipice off Trondheim, and armour-piercing bombs, mines, and depth charges were used, the latter being dropped on the cliff to roll down and explode between ship and shore. This was on April 27, 1942; (3) by Soviet submarines in the Barents Sea, on July 8, 1942; (4) by British "midget" submarines in Kaafjord on September 22, 1943; (5) and (6) by the Naval Air Arm at Altenfjord on April 8 and August 29, 1944; (7) and (8) by R.A.F. Lancasters at Altenfjord on September 15, and at Tromsö Fjord on October 29, 1944; and finally and fatally in the attack described above—a very remarkable tribute to the ship's stout construction and the efficiency of the German damage-control organisation.

In announcing this "painful naval event," the German spokesman—Admiral Saalwächter said:

"For the time being Germany no longer has a battleship capable of tying down similar British ships in the European theatre. . . . The German navy is sorry, for the sake of Japan, that British battleships have now been liberated for employment in the Asiatic theatre."

Admiral Sir Bertram Ramsay announced on November 20 that between "D-day," and up to September 15, over 2,200,000 Allied troops and 450,000 vehicles had been put ashore in Europe. Referring to the continuous efforts being made to open the approaches to Antwerp, he pointed out that the minesweepers had to sweep a channel 73 miles long and varying in width from one mile at Flushing to 300 yards upstream. He said that the enemy had employed every type of mine and "every type of devilry" to prevent them being swept.

It was made known that the German submarine U-570, captured after being depth-charged by a Coastal Command aircraft off Iceland in August, 1941, had been put in commission as H.M.S. Graph. Commanded by Lieutenant P. B. Marriott, R.N., she had sunk a U-boat on her first patrol in an attack carried out "by ear"—i.e. using the multiple-hydrophone system—while submerged.

A number of American Flag appointments were announced in Washington on November 9; chief among these was that of Admiral Royal E. Ingersoll, formerly C.-in-C. U.S. Atlantic Fleet, to the new post of Commander of the Western Sea Frontier, the duties of which were defined as being the integration of supplies "pipe-lined from all over the U.S.A. to the West Coast and pushing them across to the Pacific Fleet." Vice-Admiral Jonas H. Ingram—formerly in charge of U.S. naval operations in the South Atlantic, was appointed C.-in-C. Atlantic Fleet with the rank of Admiral.

HOME WATERS.

The enemy's sea communications with his army in Norway continued to be precarious due to the repeated attacks on his convoys in those waters. On November 12, warships under the command of Rear-Admiral McGrigor surprised one of these convoys at night, and in a "brisk 30-minute action" sank ten out of eleven enemy ships, including some escorting M-class minesweepers. The British force included the cruisers H.M.Ss. Kent (flagship) and Bellona, and the destroyers H.M.Ss. Myngs, Verulam, Zambesi, and H.M.C.S. Algonquin. The action was fought close inshore and H.M. ships came under the fire of coastal batteries, but they suffered no damage and only very few casualties.

On November 27, naval aircraft attacked an enemy convoy, steaming southwards off the coast of Central Norway. In spite of intermittent snowstorms and an armed escort, they left a transport crowded with German troops ablaze and sinking—troops were seen struggling in the water; two supply ships and an armed trawler were set on fire and driven ashore (all believed sunk); one large supply ship left on fire and listing off Namsos, and two supply ships, three armed trawlers, and a naval auxiliary left burning. Oil installations on the mainland were also bombed. The operations were under the command of the C.-in-C. Home Fleet—Admiral Sir Henry Moore—and the covering force included the cruiser H.M.S. Dido and the destroyers H.M.Ss. Myngs, Scorpion, Scourge, Zephyr, and H.M.C.Ss. Algonquin and Sioux. The naval aircraft were commanded by Lieutenant-Commander T. A. Swanton, R.N. (Barracudas); Lieutenant-Commander H. M. Ellis, R.N. (Fireflies); and Lieutenant-Commanders (A) S. Jewers and R. M. Crosley, R.N.V.R. (Seafires).

On the same date, light coastal forces of the Royal Norwegian Navy made a night attack on a north-bound convoy off the entrance to Sogne Fjord (near Bergen) sinking an armed trawler and gun coaster, probably sinking an E- or R-boat and leaving a large supply ship badly damaged by torpedo and listing, and an R-boat severely damaged. All the Nor-

wegian craft got back; there was a small number of casualties.

British submarines also took part in this campaign against the German army's supplies, and during a patrol in Norwegian waters one of them commanded by Lieutenant I. S. MacIntosh, R.N., attacked a convoy of three ships with three escorting craft, sank one of the former by torpedo, left another ablaze—believed sunk—and then successfully dodged attacks with depth charges. A later report said that this submarine—the Sceptre—with the same commanding officer, had sunk seven more large supply ships during recent patrols.

Canadian M.T.B.s, commanded by Lieutenant C. A. Law, R.C.N.V.R., made a successful attack on a strongly escorted convoy off the Hook of Holland on the night of November 1. A medium supply ship was heavily

damaged and hits scored on other vessels.

ARCTIC.

The Admiralty announced on November 4 that strong forces of U-boats had attempted, without success, to interfere with a large and important convoy which had recently made the double passage through the Arctic to Russia and back. Ships of the Home Fleet and naval aircraft, under Vice-Admiral F. H. G. Dalrymple-Hamilton, flying his flag in the escort-carrier Vindex, had sunk three U-boats and damaged several others. In the course of these operations the sloop H.M.S. Kite was lost.

Naval fighter aircraft from the escort-carrier Campania, while in the Arctic Circle-North Atlantic, shot down two Blohm and Voss 138 flying

boats, without loss.



On November 17 it was announced in Reykjavik that the largest Icelandic passenger vessel, the Godafoss of 1,500 tons, had been sunk by a German torpedo in Icelandic territorial waters. The ship had gone down in four minutes and twenty-four lives had been lost, including some women and children.

BALTIC.

Russian naval aircraft, in attacks on enemy shipping in the Baltic, south of Oslo, reported on November 19, sank two German destroyers and two tankers, and damaged three armed trawlers and a coastguard vessel.

MEDITERRANEAN.

The First Lord of the Admiralty, in a statement to the House of Commons on November 1, referred to the greatly intensified operations in the Ægean during the past six weeks. He said that cruisers, destroyers, submarines, minesweepers, coastal craft, and naval aircraft, including Greek, French, and Polish warships, under the command of Vice-Admiral Sir Henry Rawlings, had sunk thirty-one enemy warships and transports of various sizes, and forty small craft, many carrying German troops; severely damaged another sixteen enemy warships and merchant ships, and at least fifteen small craft; bombed and bombarded shore targets; and received the surrender of three islands. They had been instrumental in harassing the German withdrawal from Greece and in ensuring the passage of supplies for the Greek people.

The occupation of the port of Salonika on November 1 was admitted by the German High Command to be an event of strategical importance to the Allies because it meant that the enemy garrisons in Crete, Rhodes, and other islands in the Ægean—numbering about 20,000—were cut off from their only escape route. Before leaving, the enemy did everything he could to render the port useless: dock installations had been completely destroyed, over forty wrecks were blocking the harbour, and over 2,000

mines had been sown in the approaches.

In two evening actions on November 1, H.M. destroyers Avon Vale and Wheatland, operating in the Adriatic near Pag Island, sank three enemy destroyers. H.M.S. Avon Vale sustained superficial damage, but there were no British casualties. Some enemy survivors were rescued.

It was announced on November 10 that a destroyer force under Captain G. F. Burghard, R.N., which included H.M.S. Troubridge and the Polish O.R.P. Garland, had sunk a U-boat and picked up many survivors in the Ægean. It was also made known, on November 18, that in a night engagement with two German convoys between Genoa and Spezia, Allied naval craft blew up one enemy ship with a torpedo and withdrew without loss when shore batteries opened fire. In the confusion which followed the convoys were seen to be firing on each other and the shore batteries on both.

An announcement in the London Gazette of November 28 of the award of the D.S.O. to Sub-Lieutenant Malcolm Causer, R.N.V.R.—a prisoner of war in Germany, and of the C.G.M. to Harry Smith, A.B., missing, was the first official intimation that the Italian 10,000-ton cruiser Bolzano had been sunk at Spezia. Causer and Smith provided the crew for a "human torpedo" with which they penetrated the harbour on the night of June 21, fixed it to the hull of the cruiser and exploded it. Aerial

reconnaissance the following day ascertained that the Bolzano had capsized and sunk. She had fallen into German hands after the surrender of Italy and was the last heavy Italian cruiser afloat.

An expression of regret was sent by H.M. Government to the German authorities for the sinking, on the night of November 18, of the German hospital ship Tübingen. The ship was put down by Coastal aircraft off Pola in the Adriatic owing to the fact that she was not illuminated and could not be identified, and atmospheric conditions led to a misinterpretation of signals with the base. There were no wounded on board. The Tübingen had been intercepted by a British destroyer off Crete on October 27, with 1,023 casualties on board. In accordance with belligerent rights under the Hague Convention, these were removed and made prisoners of war, the ship being released and ordered to continue her voyage to Trieste. She put into the Yugoslav port of Bar, however, and there embarked another contingent of 337 sick and wounded. Again she was intercepted, and taken into Bari, where the casualties were removed. She was again released on November 17 to proceed to Trieste. On the following day she was sunk by mistake.

PACIFIC.

While the U.S. Army was completing the occupation of Leyte, Admiral Halsey's 3rd Fleet carrier aircraft got to work against the next island, Luzon, with a series of bombing attacks on Manila. On November 4-5, they made a particularly heavy assault on the five airfields of Clark, Batangas, Lipa, Legaspi, and Lubang; also on shipping in Manila harbour. As a result, 440 Japanese aircraft were destroyed—113 in the air and 327 on the ground—six enemy ships were sunk and twenty-four damaged. Among the warships mentioned as having been hit were a heavy cruiser—left burning and sinking—a light cruiser, and three destroyers. In another attack on the harbour, on November 12, carrier aircraft damaged a light cruiser and two destroyers, hit a floating dock, and sank or severely damaged eleven cargo vessels and oilers. A communiqué from Admiral Nimitz on November 18, reported yet another of these operations, resulting in the destruction of three enemy merchant vessels and at least 110 Japanese aircraft.

The Japanese made desperate efforts to land reinforcements in Leyte, especially at the port of Ormoc on the western side of the island, which they defended tenaciously. On November 9, a convoy of four 5,000-ton ships, escorted by fifteen destroyers, was attacked by U.S. dive-bombers as it approached the harbour; three transports and seven destroyers were sunk; but it was estimated that between 5,000 and 10,000 enemy troops got ashore. The next day another convoy of four transports and six destroyers was entirely wiped out; only a remnant of a force, estimated at 8,000, reaching the shore. In this case the attack was made by U.S.N. carrier aircraft of the 3rd Fleet. They also bombed Ormoc itself, causing much damage. A smaller convoy, consisting of three transports with a single destroyer as escort, attempting to land reinforcements, on November 23, was destroyed in a mast-head height attack by a small force of U.S. fighters; the destroyer was sunk with all hands and some 4,500 troops drowned. In a communiqué from General MacArthur, on November 25, it was stated that altogether sixteen Japanese transports, aggregating 65,000 tons, with 17,000 troops on board, also fourteen escorting warships had been sunk by U.S. land-based or carrier aircraft in the waters off Leyte.

U.S. naval activities were not confined to the Philippines. On November 10, Admiral Nimitz reported that carrier aircraft had bombed the North Kuriles (north of Japan); the Bonin Islands; and Rota and Marcus Islands. A "powerful task force" bombarded Matsuwa (Central Kuriles) on November 21. It met with no opposition and caused "large fires and several explosions." U.S. aircraft also raided the Northern Palaus, Yap, and—again—the Bonin Islands.

It was reported on November 18 that U.S. heavy bombers had made an 800-mile flight to attack enemy warships in Brunei Bay (North Borneo). They dropped 112 tons of bombs in the face of intense A.A. fire, scoring five direct hits on a Japanese battleship and four on a heavy cruiser; both were seen to be in flames.

In a summary of damage done to enemy ships, issued by the U.S. Office of War Information on November 15, it was stated that, since the attack on Pearl Harbour, 377 Japanese warships—including five battleships and eleven aircraft carriers, and 1,741 other ships had been sunk by American naval action, and 452 warships and 1,395 other ships damaged. Further successes by American submarines were announced by the Navy Department on November 26, when they were credited with twenty-seven more Japanese vessels sunk, which included a destroyer, a gunboat, two large transports, and four tankers.

In the midst of their many disasters, the Japanese had one small gain: on November 18, U.S. Pacific headquarters made known that two hundred enemy troops had been landed a week earlier, under cover of a storm, and had occupied the small island of Ngeregong in the Palaus. The few American troops on the island were taken off by landing craft without casualties.

LOSSES.

No Royal Navy warship losses were reported in November. In an announcement by the Australian Navy Minister, Mr. Makin, on November 24, he stated that the R.A.N. war losses up to date included the cruisers Canberra, Perth, and Sydney; the destroyers Nestor, Vampire, and Waterhen; the sloops Parramatta and Yarra; and the minesweeper Armidale. He also made known that, up to the end of October, 1944, the R.A.N. casualties totally 2,615 officers and men.

On November 13, the U.S. Navy Department announced that the submarine Darter had been destroyed by her crew to prevent her falling into enemy hands after she had run aground; all the 65 officers and men had escaped unharmed to an advanced naval base.

The U.S. Office of War Information, on November 2, reported that twenty-two out of the 125 pre-war American Line passenger and cargo ships had been lost during the war, including the liners President Coolidge, President Grant, President Harrison, President Pierce, and President Cleveland.

DECEMBER.

An Admiralty announcement, on December 10, gave some particulars showing how effect was being given to the policy of orientation of the British Fleet. The command known hitherto as the British Eastern Fleet was superseded by: (1) the newly-created British Pacific Fleet,

under the command of Admiral Sir Bruce Fraser (formerly C.-in-C. Eastern Fleet); and (2) the East Indies Station, under command of Vice-Admiral Sir Arthur Power. At the same time it was made known that the British Pacific Fleet had arrived in Australia, and that it was "a very powerful force" of modern battleships, aircraft carriers, cruisers, and supporting warships; the fleet flagship was the new battleship, H.M.S. Howe.

In a statement in Melbourne, Admiral Fraser said that his Fleet would be based on Australia, the battleships docking at Sydney and the aircraft carriers at Brisbane; he would have headquarters at both Sydney and Melbourne. It was officially stated that the Fleet would operate under the supreme direction of Admiral Nimitz (C.-in-C. Pacific Fleet), or of General MacArthur, if more appropriate. Later in the month Admiral Sir Bruce Fraser visited Admiral Nimitz, and on his return it was announced that complete agreement had been reached on the role which the British Pacific Fleet would play in future operations.

The East Indies Squadron—a revival of the pre-war name—was to operate chiefly in the Indian Ocean. Like the Eastern Fleet, it would operate under the supreme command of Admiral Mountbatten as Supreme Allied Commander, S.E. Asia.

If proof were needed that the battleship is still an indispensable unit of the fleet, it was given in the substantial form of H.M.S. Vanguard, launched by Princess Elizabeth on the Clyde, and stated to be "the greatest British battleship ever built." Although this event was announced on December 1, for some inscrutable reason the name given to the ship was not "released" until the following February.

The joint monthly statement on the war against U-boats read as follows:

"U-boat warfare flared into renewed activity during December, 1944. This is but another index that the European war is far from over. Increased losses in Allied merchant craft have been officially recorded as a result of the U-boats' spurt last month. Despite these, the United Nations regularly continue to supply their expanding armies over the world, enabling them to resist or drive back the attackers. The Allies continue to sink enemy under-sea craft in widely-separated parts of the Atlantic."

It was announced, on December 18, that R.A.F. Lancasters in force had carried out a night bombing attack on Gdynia (Baltic), where the remnants of the German surface fleet were lying. These included the severely damaged and dismantled battleship Gneisenau, and the armoured ships Lützow and Admiral Scheer.

On December 3, the Admiralty announced that Captain (acting Rear-Admiral) R. K. Dickson was succeeding Admiral Sir William James as Chief of Naval Information.

HOME WATERS.

Home Waters were relatively quiet during the month. On December 22, an account was published of a night encounter with E-boats off the mouth of the Scheldt, where, it was evident, they were trying to intercept Allied convoys. The destroyer Walpole, frigates Curzon and Torrington, and corvette Kittiwake, with light coastal forces, sank two E-boats south-west of the Hook of Holland, damaged several, and routed the remainder.

A Norwegian communiqué, of December 27, announced that R.N.N. light coastal forces had torpedoed and sunk a German M-class minesweeper



or destroyer and a medium-sized supply ship in an engagement off Norway; they had also damaged an escort vessel and bombarded shore installations.

ARCTIC.

The U.S. Navy Department, on December 14, published an account of the activities during the late summer and autumn of their Coast Guard in defeating determined efforts by the enemy to establish radio and weather bases in Greenland. The cutter U.S.S. Northland chased an armed trawler for seventy miles until, being hemmed in by ice, she was scuttled by her crew of twenty-eight, all of whom were taken prisoners. Early in October a German radio and weather station on Koldewey Island—800 miles from the North Pole—with its staff of twelve officers and men, were captured by two naval platoons landed from the U.S. cutter East Wind. The same cutter and the U.S.S. South Wind drove the German armed trawler Externsteine into a cul-de-sac in the ice-floes, prevented the enemy from scuttling their ship, and brought it into Boston with thirty-four officers and men as prisoners.

MEDITERRANEAN.

It was reported on December 3 that a Naval force and the Balkan Air Force had bombarded and bombed a base used by German F-boats and submarines at Lussin-Piccolo, on the Lussin Island, 60 miles south of Fiume. The Naval force consisted of the destroyers Lamerton, Wilton, Brocklesby, and Quantock, tank-landing craft, and M.T.B.s. The combined operations resulted in the destruction of three motor craft, an ammunition dump, and power house; three enemy coastal batteries were silenced.

The following day, the cruiser Aurora and the destroyers Marne, Meteor, and Musketeer, bombarded Rhodes with the object of damaging enemy shipping in the main port and preventing it being used for bringing

supplies from the neighbouring islands.

The 13th Minesweeping Flotilla, on its departure from the Station at the end of the month, received a special message of congratulation from Admiral Sir John Cunningham (C.-in-C. Mediterranean). In the course of two years service, the Flotilla, under Commander A. A. Martin, R.N.R. and comprising the minesweepers Rothesay, Rhyl, Polruan, Bude, Brixham, and Stornoway, with their attendant danlayers, had taken part in operations off North Africa, Pantellaria, Sicily, Salerno, Anzio, Southern France, and in Grecian waters.

On December 31, Allied Headquarters reported that, since December 22, French and American destroyers had carried out a number of successful bombardments of enemy personnel, batteries, barracks, bridges, transport, and ammunition dumps near the French-Italian frontier.

EAST INDIES.

It was reported on December 20 that British carrier aircraft had bombed the harbour at Belawan-Deli, on the east coast of Sumatra, and also an oil installation nearby, scoring hits on warehouses and jetties, and starting oil fires. The same afternoon they had bombed the airfields in the Sabang area.

Ships of the Royal Indian Navy bombarded enemy coast defences at Minbyin, on the west side of Ramree Island—off the coast of Burma—



on December 4. Later in the month it was reported from S.E.A.C. that a series of Commando raids had been made on the Arakan Coast, the men having been landed by the R.I.N.

PACIFIC.

Throughout the earlier part of the month the Japanese made repeated and disastrous attempts to land reinforcements in Leyte. On December 4. General MacArthur's headquarters reported that up to date seven enemy convoys had been destroyed off Ormoc—on the west coast of Leyte involving the loss of 29 transports aggregating 103,750 tons, 18 escort vessels, and 25,000 soldiers drowned. On December 10, in a last effort to help the garrison beseiged in Ormoc, four Japanese transports full of troops were sunk, and two more with an escorting destroyer were hit and left burning by American aircraft. Ormoc was captured the same day, the garrison being entirely wiped out. In a special communiqué, issued by MacArthur on December 26, announcing the end of Japanese resistance in Leyte, mention was made that since the first U.S. landings, on October 20, the Japanese had lost 113,221 soldiers and sailors; 2,748 aircraft; 40 or 41 transports aggregating over 164,000 tons, and 27 warships. The U.S. losses had been 2,623 killed, 8,422 wounded, and 172 missing.

The next important step in the campaign for the Philippines was the U.S. landing on the south-west coast of the island of Mindoro—300 miles north-west of Leyte, and only 75 miles from Manila, and separated from the main island by Luzon by only a narrow strait. So completely had the American naval and air forces secured local command of the sea, that the invading convoy for this operation, with its escort of warships and Leyte-based fighters, was able to take a route from the south of Leyte, across the Mindanao Sea, and up the Sulu Sea to Mindoro Strait, doing the voyage of some 600 miles in 60 hours, without interference—a marked contrast to the Japanese attempts to reach Leyte. The landing, on December 15, was effected against virtually no opposition. This success was largely due to the heavy neutralising attacks by carrier-borne aircraft of Vice-Admiral McCain's fleet on enemy airfields and installations on Luzon, which were kept going during the three preceding days. In the course of these operations there were fierce air battles and the enemy lost 224 aircraft either in combat or on the ground. So well did these operations progress that, by December 29, General MacArthur was able to report that "all enemy resistance on Mindoro had been quelled." The occupation of this second island, it was pointed out, had the effect of virtually cutting the Philippines in two, and of "enabling us to dominate sea and air routes which reach to the China Coast."

The next stepping stone for Admiral Nimitz's command was planned to be the tiny, but strategically very important, island of Iwo Jima in the Volcano group, little more than 600 miles from Tokyo. This was to prove a very hard nut, which was not completely cracked until well after the New Year; but the usual softening-up process began with a joint attack by warships and aircraft, including Super Fortresses from Saipan, on December 7. This was partly a reprisal for a raid, on the previous day, made on Saipan by Japanese aircraft believed to be based on Iwo Jima. The island had been bombed before, but this was the first time it had been bombarded by warships. Another combined sea and air attack was made on it during the week-end December 23-24; only

desultory fire was returned from the shore, and three Japanese destroyers were sunk during the operation. Only two days later, Iwo Jima was

again bombed and bombarded.

Such were the effects of the battle of the Philippines that the Japanese Navy, for the most part, was licking its wounds during December, and feeble attempts to interfere with Allied operations were immediately countered and further losses inflicted on the enemy's fleet. In an action by night off Ormoc Gulf, reported on December 2, American ships engaged three Japanese destroyers, sinking one and damaging one; one U.S. destroyer was lost. Admiral Nimitz reported that, between December 13 and 15, carrier aircraft of the Pacific Fleet operating in waters round Luzon, had sunk 41 enemy ships and small craft, and damaged 61 others for the loss of 27 aircraft. On December 26, it was reported that air reconnaissance had detected a Japanese squadron consisting of one battleship, one heavy cruiser, and six destroyers, coming from the direction of Luzon and making for Mindoro. Throughout the evening it was attacked by heavy bombers and fighters. Three destroyers were sunk, and hits scored on the battleship and cruiser. After some "aimless and ineffective shelling" of the Mindoro coast, the enemy force withdrew.

By the end of the month, it would appear that Manila harbour had become so unhealthy that Japanese shipping was seeking a safer anchorage in Lingayen Gulf, 150 miles to the north-west. But this, too, was within striking distance of land-based aircraft and, in an attack reported on December 30, they sank, or probably sank, two destroyers, one destroyer-

escort, three 8,000-ton transports, and two cargo ships.

U.S. submarines continued their activities and added to their mounting scores of enemy warships and merchant shipping. On December 18, the Navy Department announced that in recent operations in the Pacific and Far Eastern waters, American submarines had sunk twelve Japanese warships, including a light cruiser, three destroyers, six escort vessels, a minesweeper, and a minelayer; also twenty-one merchant ships, including two tankers. On December 27, the Department announced the sinking by U.S. submarines of another twenty-seven Japanese ships, including a large aircraft carrier, a converted light cruiser, a destroyer, two destroyer-transports, and two destroyer-escorts; bringing the total of Japanese ships sunk, probably sunk or damaged by U.S. under-water attack, since Pearl Harbour, to 1,090, aggregating 3,500,000 tons.

LOSSES.

On December 31, the Admiralty announced the loss of H.M. Frigate Bullen.

The loss of H.M.C.S. Shawinigan (corvette), with all hands, while on operational duty in the North Atlantic, was reported from Ottawa on December 8.

In the course of the month the losses of vessels belonging to well-known shipping lines were made public. These included :—

Union Castle Line.—Warwick Castle (November, 1942), Windsor

Castle (March, 1943), Llandaff Castle (December, 1943).

P. and O. Line.—Strathallan, Viceroy of India, Narkunda, Cathay, and Ettrick, all sunk by enemy action during the Mediterranean Campaign and North Africa landings.

Orient Line.—Oronsay (1942), Orcades (1942), both off the West Coast of Africa; and Orama, in the North Sea.

Shaw-Savill Line.—Waimarama, Wairangi, and Empire Hope, all in a Malta convoy in August, 1942.

On December 28, the U.S. Navy Department announced that the

submarine Seawolf was overdue and must be presumed lost.

It was made known by the Polish Naval Staff, on December 9, that their ex-British cruiser Dragon was damaged in the Normandy landing operations and afterwards sunk as one of the blockships of the breakwater off the coast.

The casualties sustained by the Royal Navy during the war have yet to be made known, but it has been officially stated that the casualties to merchant seamen serving in ships registered in the U.K. were 29,629 killed up to August, 1944. This figure taken in conjunction with the losses of H.M. Ships recorded in this Chronicle year by year, gives some indication of the price which has had to be paid in order to maintain sea communications vital to the life of Britain and the sustenance of the Allied Forces, and without which the path to liberty for Europe could never have been opened.

E. ALTHAM.

CHAPTER III.

FOREIGN NAVIES.

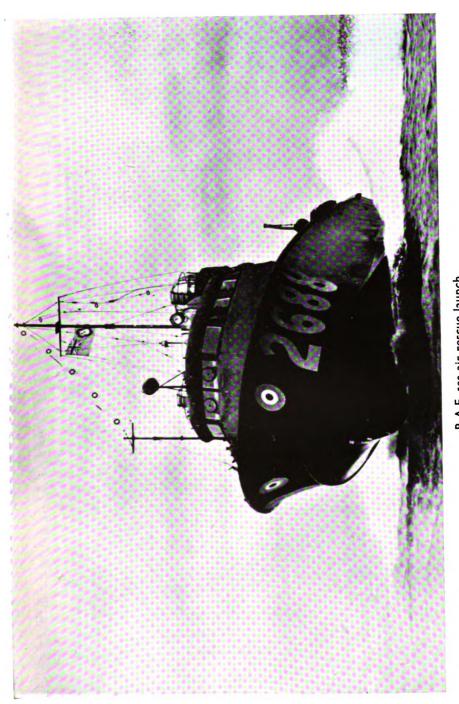
In the total amount of tonnage added to their strength, 1944 was a record year for the Allied Navies, eclipsing even 1948. Instead of escort vessels being the predominant feature, this place was filled by landing craft of all descriptions. So far as can be ascertained, there was less new construction in the enemy countries than in the years immediately preceding 1944. In Germany submarines, minesweepers, and coastal craft absorbed practically all the labour and material available for shipbuilding. A great deal of the enemy effort seems to have gone to the refitting of U-boats, in which a device combining an air-intake with an exhaust pipe has been extensively Though this enabled submarines to penetrate coastal waters from which they had long been excluded, this was only accomplished at the cost of mounting casualties, affording no prospect of reversing the defeat suffered by the U-boats in 1943. Japan's shipyards, though still turning out a certain number of destroyers and smaller craft, must have been handicapped by the large proportion of repair work thrust on them by such disasters as the Battle for Leyte last October, in which most of the enemy ships that escaped destruction suffered heavy damage. Probably the only large ships with which substantial progress was made during the year were aircraft carriers, replacement of losses in this category having become an imperative need.

Allied war losses in 1944, despite the hazards involved in the Normandy landings, were relatively moderate. As reported by the British, United States, and other Allied Navies, they amounted to two battleships, both French (the incomplete Clemenceau, destroyed during the bombing of Brest, and the old Courbet, sacrificed to form part of the breakwater for the artificial harbour at Arromanches); 1 fleet aircraft carrier, 8 escort carriers, 5 cruisers, 22 destroyers, 22 submarines, 24 oceangoing escort vessels, 28 fleet minesweepers, and 2 minelayers. By comparison, Axis losses were severe, comprising 4 battleships, 2 fleet aircraft carriers, 5 escort carriers, about 30 cruisers, probably 100 destroyers, an uncertain but large number of submarines, and a sprinkling of escort vessels.

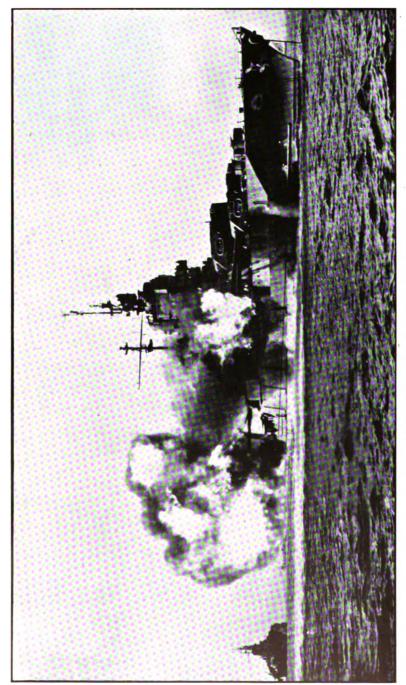
Germany no longer possesses any capital ships.

In the battle for Leyte, already mentioned as a disaster for the Japanese, their navy lost its last hope of influencing the ultimate decision in the Pacific. German threats to Russia-bound convoys off the Norwegian coast suffered their final eclipse when the 45,000-ton Tirpitz was sunk by a concentrated air attack. Apart from bigger actions, the Japanese continued to lose cruisers and destroyers throughout the year in minor encounters, such as the futile attempt to hold Leyte after their fleet had suffered a decisive defeat.

Guam, the American island at the south of the Mariana chain which fell into Japanese hands in December, 1941, has been reconquered and is now the operational headquarters of the United States Pacific Fleet. Good progress was also made towards the recovery of the Philippines from the enemy.



R.A.F. sea-air rescue launch.
Courtesy of British Power Boat Company.)



United States battleship in action. [(U.S. official Nary photograph.)

UNITED STATES.

For the fiscal year from July 1, 1944, to June 30, 1945, the total appropriations for the United States Navy amounted to \$28,583,839,301,

exceeding anything previously voted.

Expansion of personnel continued, and came within measurable distance of the four million mark. By the end of 1944 it had reached a grand total of 3,870,039 officers and men. This includes the Marine Corps, mustering 472,682, and the Coast Guard, 169,832, as well as the Women's Services.

In consequence of the death of Colonel Knox, Mr. James Vincent Forrestal succeeded to the post of Secretary of the Navy on May 19, 1944. He had previously been Under-Secretary for four years. In that appointment he was replaced by Mr. Ralph A. Bard, formerly Assistant-Secretary. Mr. Forrestal is considerably younger than his predecessor, having been born in 1892. A graduate of Princeton University, he served with the U.S. Navy in the last war, reaching the rank of lieutenant, junior grade. During his tenure of office as Under-Secretary he made a point of visiting operational waters on several occasions. He flew to Guadalcanal while the Marines there were still engaged with superior forces of Japanese; and the fighting at Kwajalein had scarcely ceased when he put in an appearance there. Mr. H. Struve Hensel is the new Assistant Secretary.

The new rank of admiral of the fleet (or as it is rendered in American parlance, fleet admiral) has been instituted in the U.S. Navy. It was conferred on three officers holding important appointments, Admiral William D. Leahy, Chief of Staff to President Roosevelt; Admiral Ernest J. King, Chief of Naval Operations and Commander-in-Chief of the Fleet; and Admiral Chester W. Nimitz, Commander-in-Chief in the Pacific.

Admiral Royal E. Ingersoll, who had been Commander-in-Chief of the Atlantic Fleet for three years past, was transferred in 1944 to the post of Commander of the Western Sea Frontier. One of his duties there was to control the flow of supplies to the Pacific Fleet through West Coast ports. He was relieved in the Atlantic Fleet command by Vice-Admiral Jonas H. Ingram, previously commanding the Fourth Fleet, who was advanced to the rank of admiral. Vice-Admiral William R. Munroe, lately commanding the Third Naval District, took over command of the Fourth Fleet.

Particulars were also released in 1944 of flag officers holding the principal commands in the Pacific under Admiral Nimitz, viz.:

Vice-Admiral John H. Towers, Deputy Commander-in-Chief.

Vice-Admiral John H. Newton, commanding South Pacific area.

Vice-Admiral Frank J. Fletcher, commanding North Pacific and North-Western Sea Frontier.

Vice-Admiral Thomas C. Kinkaid, commanding Naval forces in South-West Pacific (including apparently the Seventh Fleet).

Admiral William F. Halsey, commanding Third Fleet.

Admiral Raymond A. Spruance, commanding Fifth Fleet.

Vice-Admiral Charles A. Lockwood, commanding Pacific Submarines. Vice-Admiral William L. Calhoun, commanding Pacific Service Force. Vice-Admiral David W. Bagley, commanding Hawaiian Sea Frontier. Rear-Admiral Charles A. Pownall, commanding Pacific Fleet Air Force.

More recently Vice-Admiral Marc A. Mitscher has figured prominently in

the news as commanding a large force of aircraft carriers operating against military objectives in Japan.

BASES, SHORE STATIONS, ETC.

On April 4, 1944, the creation of a new Naval District was announced. It is known as the 17th District, and comprises Alaska and the Aleutian Islands, formerly part of the 13th District. Headquarters were temporarily established at Adak.

The former Marine base at Camp Elliott, near San Diego, California, was turned over to the Navy as a personnel distribution centre. This transfer was the result of the urgent need for additional naval facilities, which could otherwise only have been met by the construction of fresh installations elsewhere. Marine personnel and activities previously at Camp Elliott were transferred to Camp Pendelton, Oceanside, California, the chief training centre for West Coast elements of the Fleet Marine Force; it was first occupied by the Marine Corps in September, 1942. Dinner Key, Florida, became the operating base of the Navy's Air Transport Service, having been equipped for this purpose at a cost of \$1,655,200. In the last war this base was used as a training establishment for flying-boat personnel.

Since April, 1944, all U.S. naval training stations have been designated "training centres." Those in charge of them have also been known from that date by the title of Commandant, instead of the former (and lengthier) "Commanding Officer." Three subordinate commands have also been instituted, known respectively as the Administrative, Recruit Training, and Service Schools Commands. The first of these replaces the appointment of Executive Officer of a training centre.

Additional scope was given to the Marine Corps as regards air activities when it was announced last autumn that in future all flying personnel in escort carriers will be Marines. These carriers will continue to be manned by naval personnel.

Certain fleet auxiliaries have for some time past been manned by Coast Guard personnel. Thus co-operation between the Navy, Marine Corps, and Coast Guard tends to become ever closer as the war progresses.

SHIPBUILDING PROGRESS.

Some remarkably informative tables were presented by the Navy Department to illustrate the immense growth of the fleet during the past four years. As given below, they show the numbers and tonnage of all United States ships completed in that period:

(a'	Expres	sed in	numbers	of	hips :	:
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Category	·.		_			1941.	1942.	1943.	1944.
Battleships		• •	••	••		2	4	2	2
Fleet aircraft carrier	18		• •			1	1	15	8
Escort aircraft carri	ers	• •	• •			2	13	50	37
Battle cruisers		• •	• •	• •					2
Heavy cruisers							_	4	2
Light cruisers						1	8	7	11
Doctrorom						16	81	128	84
Doctorron coconta								306	197
Submarines						11	34	56	77
Patrol and mine cra	ft			• •		167	743	1,106	640
Auxiliaries			• •		• •	83	184	303	630
Tandina and	• •	•	• •	•••	••	1.035	9,488	21,525	37,724
District see ft	••	••	••	••	••	261	786	677	557
т	otal					1.579	11.342	24,179	39,971

(b)	Expressed	in	standard	displacement	tonnage:
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Category.				1 941 .	1942.	1943.	1 944.
Battleships	• •	• •		70,000	140,000	90,000	90,000
Fleet aircraft carriers				19,800	27,100	261,600	216,800
Escort aircraft carriers				13,336	94,321	380,213	262,295
Battle oruisers							55,000
Heavy cruisers				_		4,400	27,200
Light cruisers				6,000	68,000	62,000	106,000
Destroyers				26,080	143,990	255,810	180,150
Destroyer-escorts						392,525	258,550
Submarines		• •		14,998	51.884	85,456	117,502
Patrol and mine craft		• •		49,170	160,126	253,649	234,071
Auxiliaries	• •	• •	• •	528,105	579,097	714.911	2,213,861
Landing craft	• •	••		7,790	230,386	793,531	1,519,894
District craft		• •		49,929	102,850	212,808	176,167
Total		•••					
2000	- •		••	785,208	1,597,754	3,556,903	5,457,490

It will be observed that fleet auxiliaries and landing craft were the predominant categories in last year's record of construction.

BATTLESHIPS.

The third and fourth ships of the 45,000-ton Iowa class, the Missouri and Wisconsin, were both completed in 1944, the former in July and the latter in April. Construction of the remaining two ships of the class, the Illinois and Kentucky, laid down in 1942, was reported to have been resumed after being suspended for a time. In the design of these ships a return has been made to two funnels, as in the North Carolina and Washington. At some angles, indeed, one of the Iowa class might be mistaken for either of the earlier ships; but there are certain differences which are soon noticed, and the increase in length, amounting to more than 150 feet over all, is generally apparent. Cost of the Iowas is understood to have exceeded the original estimate, and is said to have averaged over \$100,000,000 for each ship.

There appears to be no present likelihood of the five 58,000-ton ships of the Montana class, authorised in 1940, being started, and they may not be laid down for some time to come.

Extensive reconstruction of certain of the ships badly damaged at Pearl Harbour has resulted in complete alteration in their appearance. The West Virginia, California, and Tennessee all present a similar silhouette, with a totally different rig from that of the Colorado and Maryland. The Nevada, too, is outwardly like a new ship. It had been proposed to reconstruct the Oklahoma on similar lines, but after she had been righted and raised, the damage was found to be so extensive that it was decided not to spend more money on her, and she was removed from the list of the fleet in September, 1944.

The battle cruisers Alaska and Guam, of 27,500 tons, were completed in June and September last, respectively. They are described as being of distinctive appearance, with a single large funnel and three triple turrets containing 12-inch guns, arranged as in the Iowa class. They are evidently fast ships, having an apparent length of about 800 feet. A third ship of this type, the Hawaii, is believed to be in hand, but it is doubtful if the remaining three, which were to have been named Philippines, Puerto Rico, and Samoa, will be proceeded with at present. There is some tendency to question the utility of this intermediate design, in which armour and weight of metal seem to have been sacrificed for two or three knots extra in speed. It is not easy to predict the precise function of these remarkable

ships, costing \$74,000,000 apiece. In spite of official insistence on referring to them as "large cruisers," they are in fact the first genuine battle cruisers to be built since H.M.S. Hood.

AIRCRAFT CARRIERS.

By the end of last year there were fifteen fleet aircraft carriers of the Essex class in service. Displacing 27,100 tons, they are rather like the British Illustrious class in general appearance, though the shape of the island superstructure gives a somewhat more pyramidal effect. Their main armament is lighter, eight 5-inch dual purpose guns as contrasted with sixteen 4.5-inch, but there are at least four 40-mm. Bofors and a great many 20-mm. Oerlikon anti-aircraft weapons. There is no official figure for the number of aircraft carried. It has been loosely given as "over 80," but in view of the number known to have been accommodated in earlier carriers, it may well be 100 or more.

Names of these fifteen ships are Essex, Yorktown, Intrepid, Wasp, Hornet, Lexington, Bunker Hill, all completed in 1943; Franklin, Randolph, Hancock, Shangri-La, Bennington, Ticonderoga, Bon Homme

Richard, and Tarawa, which passed into service in 1944.

When the new 45,000-ton carriers of the so-called "battle" type are completed they will eclipse the Essex class. The first of them, the Midway, was launched at Newport News in March, 1945, but can scarcely be ready for service before 1946. It is reported that they will each carry over 80 twin-engined bombers of the largest size. Coral Sea was to have been the name to be given to the second of these huge carriers, but it has since been changed to Franklin Delano Roosevelt. It is possible that the third ship may now be called Coral Sea.

There are apparently at least nine more of the Essex class under construction. These are the Antietam, Boxer, Kearsarge, Lake Champlain, Oriskany, Princeton, Reprisal, Valley Forge, and Philippine Sea. Of these, the two first-named were launched in 1944 and should be completed

during 1945.

Escort carriers continue to multiply, and over 100 are now in service. In the Pacific they have been used freely to support landings, three of them having been lost in the course of such operations during 1944. These were the Gambier Bay, Ommaney Bay, and St. Lo (ex-Midway). It is contended by many U.S. naval airmen that the use of these relatively small carriers is advantageous, in that it affords greater dispersion of air force. Certainly during the invasion of Luzon the "jeep carriers," as they are familiarly termed, acquitted themselves well. Their aircraft sank 111 Japanese vessels, mostly small craft, and destroyed over 100 enemy 'planes. They were also responsible for the destruction of 14 ammunition dumps, 31 fuel dumps, 1 supply dump, 107 buildings, 237 military lorries, 12 tanks, 6 bridges, seven armoured cars, and a number of "pillboxes." In fact, they may be said to have justified their existence very thoroughly.

Known as the Commencement Bay class, the latest escort carriers are reported to be similar in size and appearance to the four ex-oilers of the Sangamon type. No complete list of their names has so far been published on this side of the Atlantic, but it is known to include the Commencement Bay, Block Island (second of the name, the first having been lost during the Battle of the Atlantic), Bairoko, Puget Sound, and Rendova. It is possible that the Bougainville, Cape Gloucester, Gilbert Islands,

Kwajalein, Matanikau, Roi, Salamaua Siboney, and Vella Gulf may also prove to be units of this series.

It is gathered that the design of this group of ships has refuted criticism of some of the earlier escort carriers, to the effect that they were too heavy forward, and difficult to land upon in light airs. Some support was given to this when the forward extremity of a flight deck in a certain carrier, converted from a merchant vessel, was carried away in a heavy sea.

Photographs of the 11,000-ton fleet carriers of the Independence class were released in 1944. They illustrate the extent to which the design resembles that of the Ranger. There are four low and inconspicuous funnels, protruding from the starboard side some distance below the level of the flight deck. The main armament consists of four 5-inch guns, mounted in twin turrets at bow and stern.

CRUISERS.

Cruiser construction has been accelerated. During 1944 there were completed 2 heavy cruisers, the Bremerton and Pittsburgh, of 13,600 tons; and 11 light cruisers, of which all but one were of the 10,000-ton type, viz, the Atlanta (second of that name to figure in this war), Dayton, Duluth, Helena (replacing the earlier ship of the name sunk in the Battle of Kula Gulf), Oklahoma City, Pasadena, Springfield, Topeka, Vicksburg (ex-Cheyenne), and Wilkes-Barre. The exception was the Flint (ex-Spokane), of 6,000 tons. This ship, like the Oakland and Reno, completed in 1942-43, is without the two wing turrets, each containing a pair of 5-inch guns, which were a feature of the first four ships of the class. Thus the main armament is reduced from 16 to 12 guns of 5-inch calibre.

Cruisers launched in 1944, but not delivered, were the Chicago, Columbus, Fall River, Los Angeles, and St. Paul (ex-Rochester), of 13,600 tons; the Amsterdam, Little Rock, Portsmouth, and Providence, of 10,000 tons; and the Tucson, last of the 6,000-ton series. Those in hand and expected to be ready for launching in 1945 included the Albany, Des Moines, Kansas City, Northampton, Oregon City, Rochester, and Toledo, of 13,600 tons; and the Buffalo, Chattanooga, Cheyenne, Fargo, Fresno, Galveston, Huntington, Juneau, Manchester, Newark, New Haven, Norfolk, Spokane (ex-Flint), Tallahassee, Vallejo, Wilmington, Worcester, and Youngstown, of 10,000 tons.

It would appear that no more cruisers of the 6,000-ton type are to be built for the present. It has been suggested that they are rather too light for Pacific operations; and the omission of the wing turrets in the later units of the class suggests that experience proved it to be desirable to reduce top weight.

DESTROYERS.

The construction of destroyers is proceeding at a steady rate. Though it was at first reported that they were to be used as flotilla leaders, it has since become clear that the standard 2,200-ton type which is now being produced is merely an enlargement and improvement of previous designs, intended to meet the conditions of Pacific warfare, which call for a large and robust vessel with ample fuel capacity. Destroyers of this powerful type launched during 1944 total at least 60, built mainly by the Bath Iron Works Corporation, Bethlehem Steel Company, and Federal Shipbuilding and Dry Dock Company, though other yards contributed a few. Apparently the official name for this series is the Allen M. Sumner class, though

they are sometimes referred to as the Barton class. Their main armament comprises six 5-inch dual purpose guns in three twin turrets, as compared with five of the same calibre in single mountings in the 2,100-ton Fletcher class.

More and more of the old flush-deck destroyers, dating from the last war, are being adapted for subsidiary war purposes. A further batch, which included the Brooks, Crosby, Gilmer, Herbert, Humphreys, Kane, Overton, Roper, Sands, Talbot, Kilty, Schley, Tattnall, and Ward, was refitted for use as fast auxiliary transports, and did good work in the invasion of the Philippines—a task for which their light draught rendered them peculiarly useful. The Ward was lost in the course of these operations, a fact which called forth considerable comment in the American Press. It will be recalled that it was the Ward which, in the early morning of December 7, 1941, before the Japanese air attack developed, sighted and promptly depth-charged a Japanese submarine off Pearl Harbour.

Two 1,500-ton destroyers, the Cassin and Downes, which were bombed while in dry dock at Pearl Harbour and reduced to masses of wreckage, are now back in service. Much of the material was recovered and embodied in rebuilt hulls with parts of the machinery. Officially the two ships are regarded as reconstructions of the originals, and retain their pendant

numbers as before.

SUBMARINES.

Submarines launched during 1944 were at least as numerous as destroyers. All are believed to be of the standard 1,526-ton type, well adapted for operation against Japanese shipping in the Pacific and China Sea. From official photographs that have been released it is clear that all recently built U.S. submarines have undergone modification in appearance, the 3-inch dual purpose gun that was formerly mounted abaft the conning tower being shifted to a forward position, while a platform has been extended aft from the conning tower to accommodate one or two 20-mm. anti-aircraft weapons.

Six shippards are concerned in the construction of submarines, viz., the Navy Yards at Portsmouth, N.H., Mare Island, Calif., and Boston, Mass.; and three private establishments, the Electric Boat Company at Groton, Conn., with its subsidiary, the Manitowoc Shipbuilding Company, and the Cramp Shipbuilding Company at Philadelphia.

ESCORT VESSELS.

As the result of the cancellation of certain contracts and the transfer of a good many units to the Royal Navy, as well as to the French and Brazilian Navies, the number of destroyer-escorts in service in the U.S. Fleet is not so large as at one time seemed probable. It cannot, however, be far short of 400. There would seem to be at least three main types in this total. Latest and most effective is the group known as the Rudderow class, in which the main armament consists of two 5-inch guns mounted in turrets; three torpedo tubes are included in the equipment.

All the frigates of the Asheville class appear now to be in service. The Asheville herself is reported to have been laid down for the Royal Navy as the Adur, taken over by the Royal Canadian Navy as the Nadur, and finally transferred to the United States Navy under her present name. Similarly, the Natchez began in a British or Canadian yard as the Annan.

Contracts for four of the original 81 were cancelled, the Macon, Roanoke, Sitka, and Stamford, and the first name has since been assigned to a new cruiser. In order that they may also be made available for cruisers, the names of the Chattanooga, Toledo, Vallejo, and Worcester have been changed respectively to Gladwyne, Dearborn, Lorain, and Uniontown.

There would appear to be a dozen or more corvettes of the "Flower" class, all presumably transferred from the Royal Navy in 1942. Names published include Action, Alacrity, Brisk, Courage, Haste, Fury, Impulse, Intensity, Might, Pert, Prudent, Ready, Restless, Saucy, Spry, Surprise, Temptress, and Tenacity. Former names also have not been fully notified, but are believed to include Arabis, Begonia, Calendula, Candytuft, Ceanothus, Daffodil, Heartsease, Hibiscus, Larkspur, Lily, Nepeta, Periwinkle, Philesia, and Privet.

Though the highest number so far assigned to a submarine chaser is apparently PC 1555, it is difficult to ascertain the exact total now in service. The earliest war-built example is PC 461, but considerable numbers have been transferred to Allied Navies, including 84 to the French, 82 to the Russians, and 16 to the Brazilians. Probably there are nearly 900 still in service in the U.S. Navy, of which PC 460-496, 542-627, 776-826; PCE 827-976; and PC 1077-1265, and some higher numbers, from 1476, are known to be of steel construction. Wooden boats include 8C 497-508, 511-522, 524-541, 628-775, 977-1076, 1266-1375, and PCS 1376-1475. The initials PCE indicate that vessels are to be employed on escort duties, and PCE(R), that they are intended for rescue work as well, carrying a certain amount of first-aid and hospital equipment for this purpose. PCS implies that a vessel is fitted to undertake minesweeping when required.

OTHER SHIPS.

More than 60 additional fleet minesweepers have been built. The majority are of a new 185-foot type, though a few belong to the 220-foot (700-ton) "Raven" type. Otherwise, the strength of the minesweeping flotillas has been reduced slightly by the transfer of a number to Allied Navies. France alone has been allotted 50 of the YMS type. Most of the ex-fishing vessels acquired in 1941-42 for conversion into minesweepers have been sold or returned to their owners.

Altogether about 600 motor torpedo boats are believed to have been built since 1989. A few have gone to Allied fleets, and some have been lost, but the majority continue to do good service in the Far East and Mediterranean. The standard type now being built has an extreme speed of 45 knots and a length of 80 feet; the best service speed is about 40 knots.

The fifth and sixth units of the Curtiss class of seaplane tenders, the Pine Island and Salisbury Sound (ex-Puget Sound) were both launched in 1944. Three more converted seaplane tenders of the Tangier type, the Hamlin, Cumberland Sound, and St. George, have gone into service, together with about 20 more of the Barnegat class of small seaplane tenders.

Two ex-cargo ships, the Briareus and Delta, have been adapted for use as repair ships. Other new repair ships launched last year include the Palawan and Webster. The cargo ships Hamul and Markab have been transformed into destroyer tenders. Four small seaplane tenders, the Mobjack, Oyster Bay, Wachapreague, and Willoughby, have been appropriated for use as motor torpedo boat tenders. The ex-yachts

Jamestown and Hilo, previously rated as gunboats, have also been appropriated for duty as parent ships to M.T.B. flotillas.

Three ships which were to have done duty as destroyer tenders, the Appalachian, Blue Ridge, and Rocky Mount, have been re-rated as general command headquarters ships, and are thus classed with the U.S.S. Ancon, so prominent on D-day.

Other cases of reclassification of auxiliaries include the Alcor and Rigel, which are now repair ships. The Achelous, which started life as a tank landing ship, has been assigned to repair work with landing craft. Additional naval hospital ships have been provided by the conversion for that purpose of the transports Chaumont, Kenmore, and Henderson, which will in future be known as the Sanctuary, Refuge, and Bountiful, respectively.

Transports and cargo vessels, of one very large group numbering 310, have been given the names of counties of the United States. The majority of these have been launched, and a large proportion are in service with the fleet. Some of them are transports of the ordinary type, some attack transports; others are either cargo vessels or attack cargo vessels—the word "attack" signifying that they are intended to take an active part in landing operations, etc. In fact, the American attack transport is the counterpart of the British L.S.I.

All these vessels have been constructed for the U.S. Maritime Commission, and become naval units on a loan basis upon completion and acceptance by the Navy. In length they vary between 400 and 500 feet, with a beam measurement in all exceeding 60 feet. Their full load displacement ranges from 7,000 to 13,000 tons, and they are armed variously with 5-inch and 3-inch guns, supplemented by 40-mm. and 20 mm. anti-aircraft pieces. In combat operations the attack transport will carry many hundreds of men, comprising a complete fighting team, with all the equipment needed to gain and hold beach-heads. The attack cargo vessels, which are heavily armed for ships in this category, carry thousands of tons of food supplies, ammunition, vehicles, petrol, and medical supplies, required to maintain combat units until they have gained a firm hold on enemy territory. It is estimated that these ships must land up to two tons of equipment and supplies for every soldier who invades an enemy beach.

Both attack transports and attack cargo vessels operate as part of a task force of which they are the heart, since the successful landing of troops, weapons, and supplies which they carry is the objective of the amphibious operation. For their protection, task groups of fighting ships made up of combinations of battleships, aircraft carriers, cruisers, and destroyers proceed with them to the assault area. The auxiliaries stand off shore while the big guns of the warships soften up the enemy with bombardment. Then, after the initial waves of attacking troops have landed in smaller craft, the attack transports and attack cargo vessels move in towards the beach to facilitate disembarking more men, supplies, and equipment.

Many more specially designed transports of the "General" and "Admiral" types have been launched and completed during the past year. The former are of 13,000 tons gross, while the latter (10 of them named after flag officers and 14 after general officers) vary between 16,500 and 17,800 tons gross. All are remarkably fine ships, with no scuttles, but airconditioned throughout. They are described as being "fast," with com-

paratively shallow draught for their size. Propulsion is understood to be turbo-electric.

A ship which might have made a very valuable transport under her new name of Lafayette was the ex-C.G.T. liner Normandie. This ship was ultimately raised from the Hudson River, in which she had capsized after catching fire on February 9, 1942; but the cost of salvage having already absorbed some \$4,500,000, it was calculated that a further sum of at least \$20,000,000 would require to be expended to refit the ship and equip her as a transport, to say nothing of the time that would be needed. It was therefore decided last year to abandon further efforts to utilise the ship, and she is thus presumably to be left at the disposal of her owners or underwriters.

Better fortune befell the transport Wakefield, ex-United States liner Manhattan. Though almost destroyed by fire in September, 1942, she was later refitted and re-equipped completely and is doing useful service.

A number of transports and cargo vessels which had been taken over from the Army in the early days of the war have been returned by the Navy. These are believed to include the Ludington, J. R. R. Hannay, Henry Gibbons, Irwin L. Hunt, William H. Point, W. R. Gibson, Thomas H. Barry, Chateau Thierry, St. Mihiel, Ernest Hinds, John L. Clem, and Republic. The five last-named have since been fitted out as Army hospital ships, together with another ex-naval auxiliary, the Bridgeport. Another cargo vessel taken over by the Army, the Media, has been assigned to the corps of Engineers, and is now the Glenn Gerald Griswold.

Attention has already been called to the very large numbers of landing craft of various types completed in the past year. Those now in service are reported to include dock landing ships (LSD), measuring 465 feet over all; tank landing ships (LST), 328 feet long; medium landing ships (LSM), 200 feet; infantry landing craft (LCI) of two designs, 153 feet; tank landing craft (LCT), of two designs, 112 feet; mechanised landing craft (LCM), 50 feet; support, personnel, and vehicle landing craft (LCS, LCP, LCV, and LCVP), 36 feet; tracked landing vehicles (LVT), 26 feet; and the famous "duck" (DUKW), 30 feet.

In a report on the past year's progress, Admiral King has pointed out that, as the war develops, the changing nature of operations results in the shifting of production emphasis from vessels of one type to another. The effect of building too many vessels of any particular type, he considers, would be as serious as building too few, since the construction of unnecessary craft would involve waste of manpower and crucial materials urgently needed for other parts of the war effort. Thus it has been necessary to cut back certain programmes and to expand others with little warning.

The Admiral declares that the success of the widespread operations in the Pacific was in no small measure due to the possession of an increasing supply of well-designed and well-built auxiliary vessels. Among the smaller types, landing craft have been all-important, their effectiveness having been demonstrated from the shores of Normandy to the beaches of Iwo Jima. Initially conceived merely as carriers of troops and cargo, landing craft have been found capable of taking an active share in combat, due to recent developments in rocket armament and small quickfiring guns.

With new ships added daily to the fleet, the maintenance problem has grown more difficult. Skilled ratings do much to keep their vessels in

repair, and fully-equipped repair units follow the fleet from one advanced base to another.

NAVAL AIRCRAFT.

One of the most important innovations of the past year has been the employment in action of night fighters armed with machine guns, cannon, and rockets. The Seahawk is now replacing the Seagull as the standard scout observation plane. The Helldiver is now the standard dive-bomber. It carries over considerably longer ranges, and at much higher speeds, twice the bomb load of the older Dauntless. The Avenger, a torpedo-bomber, has replaced the Devastator, and is in turn about to be supplanted by new models now in production. All are designed to increase the load, range, and rates of climb of the present torpedo plane. A new night torpedo-bomber has already passed into service.

The Catalina, a long-range twin-engine patrol plane, still in great demand for air-sea rescue work, has been generally supplanted for patrol work by the larger Mariner and the Liberator. Its bombing work has been taken over in part also by the Ventura and the Privateer. Experimental patrol planes now envisaged will carry greater loads of fuel or bombs at considerably higher speeds than those of the present day. The Mars, which entered regular service last year, has proved to be a most efficient cargo carrier in terms of cost per ton-mile. Plans for the experimental transport programme now contemplate pressure cabins for high-speed, high-altitude transport aircraft. Amphibious gliders, rotary wing devices, and target aircraft for the improvement of anti-aircraft fire are also under intensive development.

NAVAL ORDNANCE.

The present technique of amphibious operations has imposed upon the fleet the role of acting as support artillery for troops. Shore bombardment is a tremendously heavy consumer of ammunition, and has increased enormously the volume requirements for fire-power. For example, bombardments from December 7, 1941, to July, 1944, not including the shelling of Saipan, used approximately 40,000 tons of projectiles. During the one-month bombardment of Saipan, from June 13 to July 12, the ships of the attacking force fired 11,000 tons of shells.

In many cases in the Pacific it has been found possible to neutralise enemy installations before troops have landed. In a report on the Guam action it was stated that "coastal defence guns, heavy and light anti-aircraft guns, dual purpose guns, and all types of defence installations were rendered impotent prior to the landing of troops. It is believed that not a single fixed gun above the size of a machine gun was left in commission on the west coast of the island." These shore bombardments have changed ordnance requirements and standards affecting high capacity shells, rockets, bombs, and fuses. At the time of the attack on Pearl Harbour, the Navy had virtually no "high capacity" ammunition—so-called because it contains an extremely high amount of explosive. Since then production of this type of projectile has risen rapidly, and now accounts for 75 per cent. of the output of shells from 6 to 16 inches in calibre. Monthly naval production of all types of major calibre ammunition exceeds the total quantity delivered during the first World War.

The multiplicity of tasks which must be performed in rendering impotent an enemy-held shore involves far more than volume of fire.

There are many different types of projectiles and many different types of fuses, but the nature of the objective is the major factor in determining their employment. For example, armour-piercing shells (the only type effective against armoured ships) are relatively ineffective against personnel or light structures ashore.

During 1944 the rocket became a major weapon. Beach barrage rockets, first used by the Allied Navies in the invasion of North Africa in 1942, have assisted landing craft, as well as heavier ships, to act as support artillery for ground forces. Their great usefulness begins when the barrage by big guns and bombing by planes cease. At this time, when landing troops are most exposed to enemy mortars and machine guns, rockets provide effective fire support. Seven main types of rockets, ranging from 2.25-inch to 5-inch and larger, are now being produced in quantity. Production has reached a figure about ten times that of 1943.

Approximately 900 ordnance research projects are in progress. Although experience in action has proved the efficiency of U.S. naval ordnance, it has also emphasised the necessity for the greatest possible concentration of research and development. In addition to equipping naval vessels, about 5,500 merchant ships have also been armed. In spite of the fact that a number of construction programmes are due for completion shortly, the demand for such expendable items as high-capacity ammunition and rockets will continue to be heavy until final victory is won.

NAVAL PERSONNEL.

Of the personnel on active duty early in 1945, only about 10 per cent. were in service before Pearl Harbour. It is not surprising therefore that in June, 1944, no fewer than 947 training schools, with a daily average attendance of 303,000, were being conducted. As the peak of recruitment was reached and passed during the year, it has since been found possible to eliminate, consolidate, or adapt to other purposes a few of these training facilities.

Of officers commissioned since Pearl Harbour, approximately 181,000 were appointed directly from civil life, 97,000 from officer candidate programmes, and 58,000 from lower deck sources. By direct commissioning it was generally possible from 1942 to mid-1944, the period of greatest expansion, to meet the immediate requirements of the service.

At the beginning of 1945, there were approximately 12,500 aviation cadets under instruction. In the preceding year about 20,000 officers were commissioned after completing four months' deck and engineering training at the reserve midshipmen's schools. Of these, 91 per cent. were products of the Navy College V.12 programme. Early in 1945 reserve midshipmen numbered 8,600, and the V.12 programme was operating 269 units at 185 colleges and universities, with an attendance of 52,000. Through the active assistance and guidance of university authorities, V.12 curricula have been designed to meet operational needs, and the methods used in selecting candidates have produced the most promising material available.

The "Seabees" construction battalions now number some 235,000 men with 8,500 Civil Engineer Corps officers. Of these more than 75 per cent. are serving overseas, not only building the shore facilities required for offensive operations, but also providing logistic support for fighting forces. Landing with the first wave of assault troops, Seabees have participated in almost every amphibious operation that has been undertaken.

In the past year the Women's Reserve has grown to a total of more than 88,000 officers and ratings, who are serving in nearly every type of shore activity.

POST-WAR PLANS.

As the post-war size of the U.S. Navy has still to be determined, it is impossible to estimate the numbers of personnel that will be required. It is assumed in all plans under consideration that many more officers and men will be needed than can be provided by personnel now in the regular Navy. These comprise but 16 per cent. of the wartime strength. Accordingly, serious attention is being devoted to regulations under which reserve officers may transfer to the regular Navy, and to the organisation of the Naval Reserve in the post-war period. In December, 1944, a board was appointed to consider these problems and to make recommendations concerning the means by which an effective and realistic Naval Reserve may be maintained, and by which reserve officers of the highest quality and of appropriate age and rank may be attracted towards a naval career, in which they will receive the same training as, and compete on an equal basis with, regular officers.

SUPPLY.

At sea as on land the supply of the fighting forces is a major problem of vital importance. The Navy has two distinct phases of this problem with which to deal: the moving of supplies to advanced shore bases, and the supply of ships while they are at sea. For years the U.S. Navy has given great attention to means for replenishing fuel, food, and ammunition at sea. Before the war began—even as far back as 1916—there was the so-called "fleet train," composed of tankers and other auxiliary vessels specially designed for this purpose. Since this war began, improved types of ships and better technique in using them have been developed, with the result that the fleet in the Pacific has been able to keep at sea for long periods. This has given it a decided advantage over the Japanese Navy, which is largely dependent on bases as a source of supply, and therefore has far less mobility.

Methods of supplying a fleet are settled largely on geographical grounds. If the ocean area of operations is small, as is the case in European waters, and if it is possible to set up shore-based establishments at strategic points, there is little need for a fleet train. In the Pacific, however, the problem is to protect a fleet throughout a vast area of ocean initially dominated by the enemy. This has been solved by the rapid establishment of repair and supply bases in enemy islands as they are captured, and by pushing supplies forward in ships of the train—now officially referred to as the "service force"—to supply task forces at sea.

MARINE CORPS.

In 1939 the Marine Corps comprised 19,500 officers and men, little more than the equivalent of one division. It now amounts to 478,000, a figure which includes women. There are six divisions of fighting troops in the field, and 118,086 officers and men in Marine Corps Aviation. The greater part of this strength is devoted to the fighting divisions and supporting troops, who have so notably furthered the progress of the war in the Pacific by their participation in amphibious operations. Twelve

thousand marines are assigned to U.S. warships as integral parts of the ships' companies. Others are on duty guarding naval establishments in the United States and at advanced bases. The Marine Corps Women's Reserve, now completing its second year of service, reached its total authorised strength of 18,000 in June, 1944. Approximately 1,700 of this number have been assigned to duty in Hawaii.

COAST GUARD.

The Coast Guard, which is part of the Navy in time of war, has performed a great variety of duties both within the United States and abroad, as part of the naval combatant forces, as well as in furtherance of normal Coast Guard functions. At December 31, 1944, Coast Guard personnel totalled 169,832, manning nearly 300 vessels of the fleet—transports, cargo vessels, fuel ships, destroyer-escorts, and landing craft of various types—which have participated in numerous amphibious operations in both the Atlantic and Pacific, as well as 600 Coast Guard cutters and 3,000 small craft employed in escort service and harbour security duty. In addition, 221 cargo vessels under Army control are manned by Coast Guard crews acting as volunteer port security forces. Coast Guard personnel have been assigned the task of safeguarding the nation's ports, "Spars" (Women's Reserve with their 5,000,000 linear feet of wharfage. of the Coast Guard) are performing practically every type of non-combatant duty, thus releasing men for service at sea. Their enlistment, except for replacements, ceased in November, 1944. The Spar officer training programme was completed in December. On December 31 last there were 9,829 Spars.

ORGANISATION.

During 1944 Admirals Halsey and Spruance, commanding major units of the Pacific Fleet, moved backward and forward between the central and south-west Pacific areas in support of the westward advances of Fleet Admiral Nimitz and of General MacArthur. As a general principle, all naval forces have been placed under a commanding officer of the nation which has the primary naval responsibility in the area of operations. During the invasion of Normandy and in the Mediterranean, U.S. naval forces operated under British flag officers, while in the Pacific British and Australian naval forces were under American operational control.

Vast quantities of ships, men, and material have been required owing to the extent and varied character of naval participation in amphibious operations. In the Lingayen Gulf landings the naval attack and covering forces consisted of 1,083 ships, ranging in size from battleships and carriers to landing craft. Naval personnel engaged in this force numbered 273,000. Army forces put ashore in the first five days were slightly more than two-thirds of this number. Similarly, about 800 vessels and over 220,000 naval personnel were involved in the landings at Iwo Jima.

As the result of over three years' experience, it is contended by Admiral King that the American concept of a "balanced fleet," in which aircraft and ships work together as a co-ordinated team, has been proved to be sound. There has been no dispute of the "carriers versus battleships" nature. Aircraft can do some things which ships cannot do; ships can do other things which aircraft are unable to accomplish. Working together, surface ships, submarines, and aircraft supplement each other,

so that the strength of the unified team is greater than the sum of the parts. Given the conditions under which naval war is now fought, it is impossible for a fleet to operate effectively without air power of its own. It was superiority in carrier strength which enabled giant strides to be taken across the Pacific in spite of the enemy's network of island bases. Repeatedly the fast carrier task forces of the Pacific Fleet, comprising carriers, battleships, cruisers, and destroyers, made bold offensive thrusts into distant waters, inflicting significant damage on enemy shipping and installations. They supported amphibious operations, controlling the air both before and after landings, and until air strips could be completed. They equally proved their worth in the two major actions with the Japanese Fleet which took place in the past year. The clearest evidence of their effectiveness was seen in the score of damage inflicted upon the enemy by Admiral Halsey's Third Fleet between August, 1944, and January, 1945. In those five months, while the Third Fleet was engaged in supporting the Western Carolines and Philippine operations, 4,370 enemy aircraft were destroyed, 82 enemy fighting ships were sunk, and 372 auxiliaries and merchant vessels sunk, excluding small craft, against a loss in action by the Third Fleet of only 449 American 'planes and the light fleet carrier Princeton.

Battleship fire provided the only weapon sufficiently powerful and accurate to knock out reinforced concrete pillboxes 8 to 10 feet thick, and other similarly strong land gun emplacements. Although ships are primarily designed to fight other ships, their effectiveness against heavy shore batteries has been well proved in this war.

JAPAN.

Losses during 1944 were so severe that the Japanese Navy is no longer a balanced force. In the series of actions last October, known officially as the Battle for Leyte, the new battleship Musashi, of 45,000 tons, and two older battleships, the Fuso and Yamashiro, were sunk, together with the large aircraft carrier Zuikaku, three smaller carriers, and a number of cruisers and destroyers. In June the large carrier Shokaku was lost.

Thus at the end of 1944 the battle fleet had almost certainly been reduced to the 45,000-ton Yamato (since sunk), the Nagato, Hyuga, Ise, Haruna, and Kongo. It is believed that the Mutsu, sister ship to the Nagato, was lost in 1942, as nothing has been seen or heard of her since. How many aircraft carriers remain in service it is more difficult to say. There are reports of three large new carriers named Amagi, Katsuragi, and Unryu, of which the two former may have been converted from battleship hulls building. It is also possible that the 30,000-ton carrier Taiho may still be in existence, though it is curious that she did not put in an appearance in October last, when the Japanese seem to have done their best to assemble every available ship in the Philippines area.

There seems no doubt that the glorified "pocket battleship" type so often referred to as the Takamatsu class may now be regarded as a myth, or something very like it, for not one of these ships has materialised. It is possible that they were laid down and transformed at an early stage into aircraft carriers.

A new type of light cruiser, referred to variously as the Agano or Noshiro class, is known to be in service. They are ships of about 6,000 tons, each armed with six 6-1-inch guns. One of them, reported to be

named Oyodo, is of a modified design, with an aircraft hangar abaft the

single funnel.

New destroyers are of two types, one a single-funnel design of about 2,500 tons, armed with eight 5-inch guns and four torpedo tubes, the other a medium-sized two-funnelled vessel over 300 feet in length. Losses in destroyers have been so heavy that it may be doubted whether a couple of flotillas could be formed out of the residue.

Submarines have proved an ineffective weapon in Japanese hands, and to-day they seem to be used principally for running supplies into remote island bases whose garrisons could not otherwise be maintained. Small escort vessels of a type comparable with the corvette, and still smaller wooden patrol craft about the size of a drifter, have been built in large numbers. A large auxiliary named Takachiho has also been referred to without positive identification, though it seems likely that she may be a seaplane carrier developed from the Nisshin type.

FRANCE.

With a National Government re-established in France, one is able to take stock of the *Marine Français* to an extent not possible before. The Minister of Marine is M. Louis Jacquinot, with Vice-Admiral A. G. Lemonnier as Chief of the Naval Staff and Rear-Admiral G. Thierry d'Argenlieu as D.C.N.S.

It is understood that with a possible exception or two, the whole of the fleet scuttled at Toulon may be written off as beyond repair. This leaves France at the moment with only two seagoing battleships: the modern \$5,000-ton Richelieu, which is with the Allied Fleet in the East Indies, and the obsolescent Lorraine, in European waters. Though due for replacement, the Lorraine did useful service in bombarding the German positions in the Gironde estuary at the end of April, 1945. The Richelieu has discarded her aircraft and catapult, and has added over 100 light anti-aircraft guns, of 40 and 20-millimetre calibre, to her armament.

Though the ancient Paris still exists, she has been definitely relegated to harbour service, and can no longer be reckoned as effective. Her sister ship, the Courbet, was expended usefully as part of the break-water protecting the artificial harbour formed on the Normandy coast in June, 1944.

The fleet aircraft carrier Béarn, so long laid up at Martinique, has undergone a complete refit in one of the United States Navy Yards. In view of her comparatively low speed—21.5 knots on trials, and now less it has been decided to reclassify her as a transport d'aviation. In the meantime, the French Navy possesses an escort carrier, acquired under the Lend-Lease arrangement, in the Dixmude, formerly H.M.S. Biter, and originally the merchant vessel Rio Parana. She is a ship of about 7,000 tons standard displacement, with Diesel engines of 8,500 B.H.P., giving a speed of 16.5 knots. In the Battle of the Atlantic she has already accomplished useful work. Thus in May, 1948, she figured prominently in a five-day action with a "wolf-pack" which tried to attack a convoy in whose escort she was included. In co-operation with other ships she was responsible for the destruction of five U-boats on this occasion. Again, in February, 1944, it was announced that the Biter's aircraft had sunk two submarines, besides destroying a German 'plane, in Atlantic convoy operations.

There are nine cruisers in commission, comprising the 7,600-ton Gloire, Montcalm, and Georges Leygues; the Emile Bertin, 5,886 tons; the Jeanne d'Arc, 6,496 tons; the Suffren, 9,938 tons; Duquesne and Tourville, 10,000 tons; and Duguay-Trouin, 7,249 tons. All of them have been refitted to some extent, aircraft and catapults being removed and the armament augmented by numerous 40-mm. and 20-mm. guns. Five smaller vessels, hitherto rated as contretorpilleurs, Le Fantasque, Le Malin, Le Terrible, and Le Triomphant, of 2,569 tons, have been classed as croiseurs légers, though the Albatros and Epervier, of 2,441 tons, and Tigre, of 2,126 tons, still retain their original status.

Other and smaller destroyers which are rated as torpilleurs are L'Alcyon, Le Fortuné, Basque, and Forbin, of 1,378 tons; five of the Simoun class, of 1,319 tons, and eight of the Pomone class, of 610 tons. In addition there are six vessels of the American "destroyer-escort" design, of 1,300 tons, the Algérien, Hova, Marocain, Sénégalais, Somali, and Tunisien, which, as each carries three torpedo tubes, may be counted for practical

purposes as in the same category.

Of the 83 submarines with which France entered the war, only 26 are still in service. On the other hand, four new ones have been added, of which three, the Curie, Doris, and Morse, are of the British "Ursula" design, while the fourth, renamed Narval, was formerly the Italian Bronzo,

a prize taken at Augusta in 1943.

Many changes have occurred in the list of escort and patrol vessels, which now includes five sloops of the Charner type, six frigates of the British "River" type, ten corvettes, 16 aviso-dragueurs of the "Elan" class, and three survivors of the numerous small patrol vessels built during the last war. Coastal craft comprise eight Vosper motor torpedo boats; 30 steel and 50 wooden submarine chasers transferred from the U.S. Navy; seven motor launches of the "Fairmile" type; and nine chasseurs of French construction. There are also 44 motor minesweepers, two-thirds of them of the American YMS type and the remainder of British design.

Fleet auxiliaries are much reduced in number. There remain four oilers, the Elorn, Var, Mékong, and Drome; a hospital ship, the Canada, which has recently been employed as a transport; and three armed merchant vessels, the Cap des Palmes, Barfleur, and Quercy, the first-named of which is rated as a croiseur auxiliaire. It is not clear how many of the numerous fleet tugs remain in service; some were placed temporarily under the White Ensign in 1930, but will doubtless be returned to France now that hostilities in Europe have ceased. Nearly 30 new tugs are reported to have been transferred from the United States Navy under the Lend-Lease scheme. The Clyde-built Girundia II has been commissioned as an Admiralty yacht.

Personnel at the end of 1944 totalled 63,000 officers and men.

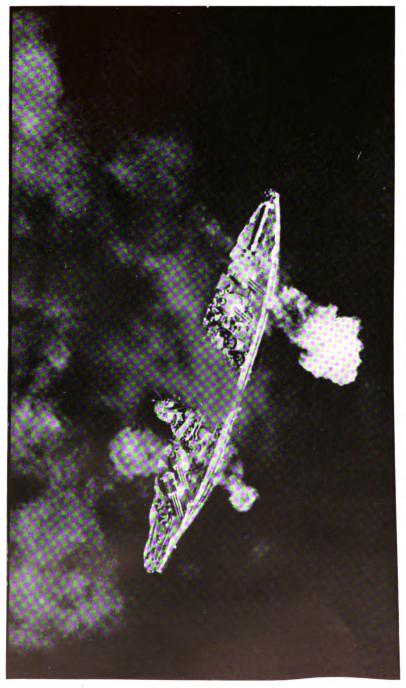
ITALY.

Though full information as to the present state of the Italian fleet is still lacking, a good deal more is known about it than a year ago. Since the disabled Impero and Conte di Cavour were both sunk or reduced to wrecks before the fall of Trieste, it seems as though Italy has emerged from the war with five capital ships; if she is allowed to keep them, she will still rank third in the list of naval powers so far as this category is concerned. Nor have her losses in cruisers been so severe as might have been expected. At least three of the fast ships of the Regolo class have





Amphibious force approaching the Riviera coast. August 1944. (British official photograph. Crown copyright reserved.)



U.S.S. Pennsylvania bombarding Japanese in Guam. (U.S. official Navy photograph.)

survived, together with half a dozen others of improved "Condottieri"

designs.

It is in destroyers that the Italian Navy has suffered its heaviest losses. So far as can be ascertained, there are only about 30 left in service, excluding any that may have been recovered with the German surrender in Northern Italy. Submarine losses have also been considerable, the number remaining being 34 according to the latest account.

There are 28 so-called corvettes (avvisi scorta), and a few more may be under construction. The large sloop Eritrea, the seaplane carrier Giuseppe Miraglia, a couple of small minelayers, 25 minesweepers of the RD type and an uncertain number of coastal craft complete the total of fighting ships. A surprising number of auxiliaries seem still to be in existence.

GERMANY.

During 1944 the strength of the German Navy declined further with the destruction of its only remaining battleship, the Tirpitz. There seems to be no doubt that the Gneisenau was found to be beyond repair after examination in dock. No attempt was made by the enemy to utilise the remaining large surface ships, except for bombardments in support of the retreating German armies in the Baltic. In the course of 1944 the whole of the flotilla of destroyers based on French ports was wiped out, together with large numbers of coastal craft. Various Italian destroyers which had been seized and manned by German officers and men were sunk in the Adriatic and Aegean.

Though U-boats continued active during 1944, they suffered heavy losses, and by August last their total casualties are known to have exceeded 500 since the outbreak of war. Probably when the complete records are available it will be found that even more were destroyed than have been claimed officially.

RUSSIA.

In the course of 1944 the Soviet Navy was augmented by the transfer to it, presumably under Lend-Lease arrangements, of H.M.S. Royal Sovereign, now renamed Arkhangelsk; the U.S. cruiser Milwaukee, which has become the Murmansk; eight destroyers of the "flush-deck" type, originally acquired by the Royal Navy from the United States in 1940; several submarines, reported to include H.M.S. Sunfish; ten minesweepers of the YMS design; a dozen or more motor torpedo boats; 12 steel submarine chasers and 70 of wooden construction.

The three old battleships which have for so long been the largest units of the Russian fleet have resumed the names which they originally bore. Thus the Marat has become the Petropavlovsk again; the Oktiabrskaya Revolutia is now the Gangut; and the Pariskaya Kommuna is the Sevastopol. Previously it had been reported from Sweden that the name Petropavlovsk was assigned to the ex-German cruiser taken over in January, 1940, but this was evidently a mistake.

OTHER EUROPEAN COUNTRIES.

BELGIUM.

It is understood that the corvettes Buttercup and Godetia, which were formerly manned by the Section Belge of the Royal Navy, have been paid off and recommissioned, the former with Norwegian personnel. A number of British coastal craft are still Belgian-manned.

BULGARIA.

A couple of small patrol boats have been built and named Maritza and Vardar. Particulars of these craft have not so far been received.

DENMARK.

Last year the old coast defence ships Niels Iuel and Peder Skram, which had been taken to Kiel for refit, were irreparably damaged by R.A.F. bombing. To what extent other ships scuttled by the Danes may have been repaired by the Germans is uncertain; but there is no doubt that the Danish fleet will have to be largely rebuilt after the war.

GREECE.

It appears that the transfer of H.M.S. Avonvale and Cowdray, which were to have been taken over by the Royal Hellenic Navy as the Aegean and Navarkhos Hastings, was never completed, and these ships remain under the White Ensign. On the other hand, another submarine, the Delfin (ex-H.M.S. Vengeful) has been acquired from the Royal Navy.

Eight wooden motor minesweepers of the BYMS series have been named Afroessa, Karteria, Kassos, Kos, Leros, Paralos, Patmos, and Salaminia.

An Italian prize, the submarine Perla, has been transferred to the Greek flag and renamed Matrozos.

NETHERLANDS.

Admiral J. Th. Furstner, Commander-in-Chief of the Royal Netherland Navy, has relinquished the office of Minister of Marine, which he had been

holding temporarily, in favour of Mr. J. M. de Booy.

The old cruiser Sumatra, after her armament had been removed, was utilised to form part of the breakwater in Seine Bay during the invasion of Normandy. This leaves the Dutch with only two cruisers, the Tromp and Jacob van Heemskerck. It would not be surprising if certain German cruisers which have surrendered were to be given to the Netherlands as some compensation for their losses.

A new submarine, the Tijgerhaai ex-H.M.S. Tarn, has been completed in a British shipyard; she is believed to be of the "Trident" type. An older British submarine, H.M.S. Sturgeon, was acquired by the Royal Netherland Navy some time ago and renamed Zeehond. She is used for

training.

NORWAY.

A second new destroyer of the same type as the Stord was acquired last year and named Svenner. She had previously been H.M.S. Shark. Unfortunately she was torpedoed and lost on D-day. In her stead the "Hunt" destroyer Badsworth was taken over and renamed Arendal. The old flush-deck destroyers Lincoln and St. Albans have been paid off, and may be amongst those since transferred to the Soviet Navy. An old torpedo boat, the Draug, dating from 1908, has been scrapped. An older and smaller torpedo boat, the Ørn, escaped from Norwegian waters to a Swedish port.

Other additions to the Royal Norwegian Navy include the submarine Utsira (ex-H.M.S. Variance), the corvettes Tunsberg Castle (ex-H.M.S. Shrewsbury Castle) and Buttercup (the latter previously manned by the Section Belge), 12 motor torpedo boats and six motor minesweepers.

POLAND.

The Polish Navy has taken over the cruiser Conrad, formerly H.M.S. Danae, in replacement of the sister ship Dragon, used as part of a breakwater on the Normandy coast after she had been put out of action by an enemy torpedo. Half a dozen motor gunboats, numbered S5 to 10, are also operating under the Polish flag.

PORTUGAL.

British trawlers acquired by the Portuguese Navy in 1943 have been named or numbered Açor, Alberia, Algol, Almancil, Almourol, Altair, B1, and P1 to 6. A second oiler of the Sam Bras type has been ordered to be built at the Government dockyard at Alfeite.

ROUMANIA.

The two submarines launched at Galatz in 1941, which at first were numbered S1 and 2, have now been given the respective names Marsouinul and Requinul, otherwise Porpoise and Shark.

SPAIN.

Most of the cruisers in the Spanish Navy have been refitted, their armaments being augmented with modern anti-aircraft weapons. In the case of the Mendez Nuñez, launched in 1923, reconstruction has altered the appearance of the ship completely. Nine destroyers of nearly 2,000 tons, to be named Blasco de Garay, Blas de Lezo, Bonifaz, Gelmirez, Langara, Marques de la Ensenada, Oquendo, Recalde, and Roger de Lauria, are to be built at Ferrol. In addition, the construction of the destroyers Alava and Liniers, of 1,650 tons, originally ordered in 1936, is being resumed.

Four more gunboats of the Cortes class, of 1,710 tons, have been laid down since the first four units were launched. The additional ships are to be named Legazpi, Magallanes, Sarmiento de Gamboa, and Vicente Yañez Pinzon. A dozen coastguard patrol vessels of 500 tons are under construction, their names being Aldebaran, Altair, Antares, Arcturus, Canopus, Castor, Polar, Pollux, Regulo, Rigel, Sirius, and Vega. All seven of the new minesweepers of the Bidasoa class have been launched. Ten new motor torpedo boats of 120 tons are under construction at Cadiz.

SWEDEN.

In December last the Tre Kronor, first of a pair of new cruisers of 7,500 tons, was launched at Göteborg. An older cruiser, the Gotland, which at the time of her completion ten years ago was hailed as a highly original design by reason of the flight deck aft, has now been rebuilt without it. Further particulars of the destroyers Øland and Uppland, under construction, show them to be vessels of 1,700 tons with a speed of 35 knots.

SOUTH AMERICAN REPUBLICS.

BRAZIL.

Four "destroyer-escorts" were taken over from the United States Navy last year and have been rated as contratorpedeiros. Their names are Baurú (ex-Reybold), Beberibe (ex-Herzog), Bertioga (ex-Pennewill) and Bracui (ex-McAnn). The total number of submarine chasers acquired is 16, of which eight are built of steel and the others of wood.

CHILE.

Some concern was caused recently by reports that the sailing training ship Lautaro had been lost. It now appears that she was seriously damaged by a fire which broke out on board while she was off Callao.

Fate of the transport Angamos, under construction in Denmark, was for some time uncertain. On completion she was seized by the Germans,

but she has been since recovered intact.

COLOMBIA.

Two 83-ft. coastal patrol vessels were acquired from the United States Coast Guard last year.

DOMINICAN REPUBLIC.

This Republic now possesses ten patrol vessels and a buoy tender; all the former were built in United States shippards, and vary in displacement from 18 to 47 tons.

MEXICO.

A yacht of 2,113 tons Thames measurement, the Southern Cross, has been purchased for use as a training ship and renamed Orizaba. Five wooden submarine chasers have been taken over from the United States Navy and five 83-ft. patrol boats from the U.S. Coast Guard.

Personnel now totals 900 officers and 3,500 ratings.

URUGUAY

A wooden submarine chaser has been acquired from the United States Navy.

ASTA.

CHINA.

The French river gunboat Francis-Garnier, of 639 tons, launched in 1917, has been presented to the Chinese Navy, which has renamed her Fa-Ku. Normally she is capable of a speed of 15 knots, but it is understood that at present she is immobilised owing to engine-room defects.

FRANCIS MCMURTRIE.

CHAPTER IV.

THE FUTURE OF THE BRITISH MARITIME INDUSTRIES.

"The First World War proved a first-class economic disaster to those who live by constructing, operating and sailing British ships." * At the opening of the struggle in 1914, over 44 per cent. of all the merchant tonnage of the world was under the British flag, but by 1919 that proportion had fallen to 34 per cent.; British shipyards were launching about 2,000,000 tons each year, while afterwards the output fell to Then came the post-war "slump"—the longest and 600,000 tons. most severe depression which the maritime industries of this country had ever known. It was "a smashing blow" * to British shipping and shipbuilding. By 1939 the percentage of British tonnage had decreased to 26.1 per cent. and in the 'tween-war years, the shipyards which had built over 2,000,000 tons a year in better times, were to a great extent idle; in 1933 they turned out merchant ships of only 193,000 tons, and, owing to the unilateral disarmament movement, the Admiralty, obeying the politicians in office, had no orders to give for men-of-war. The depression involved in unmerited distress thousands of seamen who had no ships in which to serve, and craftsmen who had no ships to build, and also reacted disastrously on the wide range of industries in fifty or sixty inland towns, which are concerned with the equipment of ships.

When this war is over, the maritime industries will face much the same problems as after the last war, and some new ones. Shipowners and shipbuilders, as well as the seamen and the craftsmen in the shipyards and engine shops, are wondering whether, though the same mistakes may not be committed, there may not be other, and perhaps more serious mistakes owing to the attempt to mix politics with business. To shackle in State chains the maritime industries which are the product of individual enterprise and must be conducted on a world competitive basis, since the seas are open to all nations, would inevitably result in a further decline in this country's maritime strength, with results which would doom all chances of reviving our export trades, without which we cannot maintain the pre-war standard of living, much less raise that standard.

BRITISH SHIPPING IN THE PAST.

Shipping has an importance from a national point of view which is not generally realised. It not only supplies the needs of this island country, but the needs of other countries; it is estimated that of the foreign-foreign trade of the world, over one-third was carried in British ships. The gross earnings of shipping on the world's trade routes were, before the war, our greatest export, greater than coal, iron, steel, cotton or any other industry; and if the ships sunk during the war by enemy action or marine casualty, representing about half the pre-war tonnage, as well as the vessels worn out during five and a half years of arduous war service, are not speedily replaced, all hope of balancing our national trading account and thus paying our way must be abandoned. The schemes for social betterment

^{*} Parliamentary Secretary to the Ministry of War Transport, House of Commons.

would be involved in this disaster. The White Paper "Statistics Relating to the War Effort of the United Kingdom," published early in December, 1944, revealed Britain's war losses of merchant ships and seamen.

Vessels of All Tonnages, in 000's Tons Gross.

				No.	Tons.
1939	(September	to	December)	 158	498
1940	` •		′	 728	2,725
1941				 892	3,047
1942				 782	3,695
1943	• •		• •	 361	1,678
				2,921	11,643

It was also revealed that from the beginning of the war to August 31, 1944, 29,629 merchant seamen serving in U.K.-registered ships had been killed by enemy action at sea, and 4,173 had been interned by the enemy.

When the war opened we were not paying our way. What is the present position, so far as the export of goods is concerned, after five and a half years of concentration on the prosecution of the war? Exports have decreased since the opening of the war by 71 per cent. in volume and 51 per cent. in value. That decline has been, in some measure, due to the loss of trade with Germany, Italy and Japan, but, apart from this suspended enemy trading, this country has surrendered two-fifths of its dealings with the rest of the world. That has been the price, or rather part of the price, which we have paid for victory. We export not only goods, but services—what are known as invisible exports. Foreign investments, which yielded £200,000,000 annually, have been largely sacrificed since 1939 in helping to pay for the war; half our shipping, as has been stated, has been sunk; and no one can estimate the extent to which bankers, insurance firms and others responsible for other invisible exports before the war, will be able to resume business overseas after the war. The gravity of the country's position, bearing in mind the shrinkage of our invisible exports, may be judged from the following official figures (in £ millions) of the average annual trade account of the three years (1936-38) before the outbreak of war:—

Goods—Imports £930 million plus Government payments of £10 million Exports of manufactures, coal, etc	940 540
Deficit	400
£10 million	360
Net deficit	40

Owing to unfair competition before the war, in which many foreign countries indulged, the gross earnings of shipping made good in 1938 only 26 per cent. of the country's rising adverse visible balance on the trading account, whereas in 1920 the figure had been as high as 91 per cent.

Shipbuilding is also an important export industry. In pre-war days, one-third of the facilities of the shippards and engine shops—including, of course, those of Northern Ireland—were engaged in building for British

^{*} We have not only lost this income, but have incurred foreign liabilities of £300,000,000 on which interest will have to be paid.

95

shipowners, and one-third were occupied in carrying out orders for the Admiralty, while foreign countries provided work for the remaining third; these contracts embracing men-of-war for various Governments and merchant ships for private shipowners. The relative cheapness of British shipbuilding, as well as its high efficiency, rested on this tripod—the orders of British shipowners, the British Government and foreign customers. In the later years of the nineteenth century, four out of every five merchant ships affoat under all flags were built in the British Isles, as well as warships for many of the lesser Naval Powers. "At the close of 1911, 1912 and 1913 there was in each case over 100,000 displacement tons of foreign warship work under construction in Britain, and at June, 1914, there were 16 such ships building with a total tonnage of 152,145 tons, a considerably greater total tonnage than the private yards (as distinct from the Royal Dockyards) have had under construction for the British Admiralty at any time since 1929."* The export of merchant ships, the value of which has always been considerable (in 1913 the Board of Trade placed it at £8,203,688), also accounted for a great deal of employment. After the First World War there was a short-lived boom and then the foreign orders fell off. In later years the decline continued. If the economic perils to which this country will be exposed after the Second World War are not to prove deadly, the vital importance of the maritime industries, not only as a source of livelihood, directly and indirectly, of about three million men, women, and children, but also as an export industry, must be more fully realised.

The gravity of this country's economic outlook is ultimately traceable to the fact that most people in inland towns, who constitute the majority of electors, forget that we live in an island and that the sea routes, protected by the Royal Navy, are our only highways to the markets of the world. British shipping is in no way protected from competition. For many years past, owing to the policies pursued by many foreign countries in subsidising and otherwise protecting their own shipping, we have been dependent on foreign tonnage for the transport of an increasing percentage of our imports and exports. In 1938 British shipping, in fact, carried only 56.9 per cent. of our exports; the proportion of imports which reached us in British ships was only 59 per cent. Year by year, the proportion of cargoes carried, inward and outward, in British ships had been decreasing before the war. That this movement was due to lack of enterprise or to the inefficiency of British shipowners, even so consistent a critic of the shipowners as Mr. Emanuel Shinwell, Labour M.P. for Seaham, has denied.† It was traceable to the deliberate attempt of foreign competitors, and especially Germany, Italy and Japan, to force British ships, useful in war as in peace, as they realised, off the trade routes by resorting to various forms of flag discrimination. Parliament, representing the nation, regarded the decline of British shipping, as well as shipbuilding, with indifference until the eve of the war, and then a Bill providing assistance by way of loan or grant was proposed. Hostilities opened while it was still being discussed in the House of Commons and the Bill was abandoned. The possibility that even a larger proportion of British imports and exports may be carried in future years in foreign ships is not

^{* &}quot;Sentinel" in "Brassey's Naval Annual," 1934.

^{† &}quot;We must be more efficient. I do not mean that in the sense of efficiency in administering the mercantile marine, because I do not think any charge could be laid at the doors of the shipowners on the grounds of inefficiency."—House of Commons, July 14, 1944.

to be lightly dismissed. In that event, nothing would be easier than for foreign shipowners, in the absence of effective competition under the British flag, to penalise British trade by methods which it would be difficult to counter.

THE WAR EFFORT.

During the war the balance of commercial sea power has undergone an alarming change as the result of the fine shipbuilding effort on the other side of the Atlantic, including the laying out of many new shipyards and the intensive training of tens of thousands of workers. This shipbuilding drive was undertaken in order to make good the losses of tonnage due to enemy action. In the most critical months, American ships, built in record time, went a long way to save the situation. Tribute has been paid in this country to the manner in which the American shipbuilding movement was carried out—a triumph of industrial mobilisation and production. It was very costly, but victory is worth any price; the ships, in fact, cost about twice as much as in the British Isles. By agreement between the British and American Governments, the shipyards of Britain and Northern Ireland concentrated mainly in the building of men-of-war and on repairs, since that allocation was best suited to the conditions of war. But it would be an error to conclude that British shipyards launched, therefore, few merchant ships. In spite of the priority given to men-of-war and repairs, the output rose from month to month. In the four months from September to December, 1939, 56 merchant vessels of a gross tonnage of only 243,000 were completed in this country. In 1940 the number of ships completed was 182, of 810,000 tons. The number in 1941 was 236, of 1,158,000 tons. In 1942 the number was 259, of a tonnage of 1,302,000. In 1943 the number was 237, of a tonnage of 1,204,000. The tonnage of merchant vessels launched in the four war years 1915-18 (3,770,170 tons) was a good deal less than the tonnage which was launched in the four years 1940-43. Then the tonnage was 4,415,668, in spite of the fact that there were fewer yards and slips and less labour was available than in 1918, and in spite of the blackout and air-raid damage to the workers' homes.*

AMERICAN SHIPPING AFTER THE WAR.

But the British output of new tonnage was, nevertheless, far smaller than that of the American yards, new and old. Varying estimates have been made of the amount of tonnage which will be afloat under the American flag when the war ends. All those ships will be general cargo carriers or oil tankers as distinct from passenger vessels and refrigerated tonnage. Though the American merchant fleets, which are to be operated by private firms after the war, for there is no idea of State ownership or management, will be badly balanced, they will include not only the slower "Liberty" ships, but a large number of the later class of the "Victory" type of higher speed—about 14½ or 15½ knots, good competitive cargo carriers. The American delegation to the International Business Convention in New York on November 15, 1944, reported that the United States will need only a little more than one-third of the merchant fleet she will own at the war's end—assuming it is over by the middle of 1946—to carry her own commerce. They stated that by the middle of 1946 the United

^{*} First Lord of the Admiralty, House of Commons, November 1, 1944.



States will have a merchant fleet of 48,000,000 deadweight tons. Only 7,500,000 tons will be required to carry American foreign commerce, and 9,800,000 tons for coastal, inter-coastal and inland waterway traffic. Some of the surplus of 30,700,000 tons will be laid up as a reserve. The remainder will be offered for sale to foreign buyers, so the conference was told. The delegates made it clear that the United States planned to carry 50 per cent. of its foreign trade in its own ships.

Whether this is the last word on the future strength of American seagoing ships engaged in foreign trading, time will show. It should be added that in addition to its foreign ships in competitive trading, the United States has a large number of ships engaged in the coastal trades which are reserved to national ships, and the word "coastal" embraces overseas possessions as far away as Honolulu. Before the war, the United States also had vessels of 2,538,220 tons gross on the Great Lakes.

In any event, for the first occasion in modern times, the British mercantile marine will no longer be supreme on the seas. The Germans have claimed that though they might not defeat this country on land and in the air, they would drag it down from the position of maritime primacy which it has occupied for so many centuries, to the benefit of British seamen, British overseas trade and finance, and British prestige in the world, an asset of incalculable value. We must see to it that that prophecy is not fulfilled.

THE PROSPECT FOR BRITISH SHIPPING.

The Minister of War Transport (Lord Leathers), speaking on behalf of the Government, has given two undertakings. In the first place, he has declared that "the British mercantile marine must be as large as it was before the war and as much larger as enterprise and efficiency can make it," and secondly, that the shipbuilding industry must be "an instrument of national safety and capable of entering actively into the export market " —that is, in a position to compete successfully for foreign orders; that is essential if a full measure of employment is to be provided. The prosperity of the shipbuilding industry depends on a steady flow of naval as well as mercantile work. In discussing naval shipbuilding in the course of a debate in the House of Commons on November 1, 1944, the First Lord of the Admiralty stated that "the reconstruction of the British Navy will call for a continuing effort on the part of the shipbuilding industry for some time to come," and admitted that "it was desirable to avoid violent fluctuations in Admiralty orders from year to year." But he also added that " such an adjustment in naval building for this purpose, might prove difficult because the very principle implies a long-term naval programme, with complete freedom to the Admiralty, subject, or course, to the Cabinet's consent, to accelerate or retard it as required; but as Parliament, rightly, I think, always wishes to and does control naval building in peacetime, such a long-term programme may be difficult to achieve.

British shipping and shipbuilding are twin industries; if the one suffers eclipse, so must the other. Both are, moreover, dependent industries. Shipping is dependent on the state of international trade, which it cannot create or control but merely serves, and shipbuilding is dependent on shipping, for the smaller the mercantile marine of this country and other countries from which orders are received, the fewer replacement ships will be built. The interdependence of shipping and shipbuilding and inter-

national trade was illustrated in the 'tween-war years; as British shipping declined in volume and former foreign customers built their own ships with the aid, in many cases, of State subsidies, work in British shippards fell off, with the result that many establishments were dismantled, others were only partially and irregularly employed; thousands of craftsmen passed into more prosperous employment, and a large proportion of those who remained in the shippards and engine shops were idle for want of work.

The Government is now pledged to see to it that everyone associated with maritime industries, as in other industries, has full employment. How that pledge is to be honoured, whether by nationalisation or by private enterprise, has been a matter of controversy. The more the complexities of the twin industries, both of them exposed to foreign competition, have been examined, the less inclination has been shown, as debates in Parliament have revealed, to resort to State ownership or State management. Experiments of that kind in foreign countries have resulted in heavy loss. Shipping could not, of course, be nationalised unless ship-yards were also nationalised. Mr. Emanuel Shinwell, M.P., the recognised spokesman of the Labour Party in the House of Commons on shipping and shipbuilding, made a notable declaration on this subject on May 5, 1944.

"If anybody expects me to make a plea for the nationalisation for shipping at the end of the war they will be disappointed. Not even to satisfy ideologists on my own side am I going to do that. You can nationalise the railways and do much to co-ordinate rail and road transport, but when it comes to shipping I want to see a scheme properly worked out and practicable before I attach my signature to it.... You can organise some part of the shipping service of the country on a national basis, and as far as possible you ought to do it, but it is no good talking yet about complete nationalisation.... In the future we shall have to compromise. There will not be complete Socialism. I doubt if we shall get that from this Government, and if a Labour Government came in we should not get complete Socialism. I hope that statement will satisfy people on the other side. But we have to get something in the nature of a compromise between a large measure of State direction and State ownership of essential indispensable industries and services and a certain measure of private ownership. That must be the line of progress for some years."

It is also significant that the Trade Union Congress last autumn excluded ocean shipping from the resolution which advocated the nationalisation of certain industries, such as coal mining, railways and road transport. It may be assumed that the British shipping and shipbuilding industries will continue to be conducted by private enterprise, subject, it may be, to greater State control than in the past.

What then will be the situation after the war? As Lord Winster has pointed out, "the ships"—which the Ministry of War Transport has controlled during the war, leaving the management to the shipowners, the experts—"were private property; they were built by private capital subscribed out of private savings; and they were owned by private companies. When the war broke out, the State borrowed the enormous fleet of 18,000,000 tons from the private companies and assumed supreme control over it. . . . To borrow 18,000,000 tons of ships," he remarked, "is quite a large loan. Most of what was borrowed must, after five years of war, be written off as sunk or worn out." *

How the mercantile marine, privately owned and privately managed, is to be restored to at least its pre-war strength is obviously a primary problem to an island community which must transport overseas not only the goods it sells to other countries, but practically all the raw materials on which it works and about half the food by which it lives, however

^{*} House of Lords, October 1, 1944.

much agriculture may be "spoon-fed." It is generally true that the whole British mercantile marine, efficiently balanced so as to serve the various trade routes and trades, will have to be completely rebuilt in the next ten years.

THE INTERNATIONAL FACTOR.

The problem of shipping, which is also that of shipbuilding, it is obvious, has two aspects—international and national. The fundamental issue is international. Now that the war in Europe is coming to an end and the conditions of the peace are being considered, it is not inappropriate to recall the bold declaration of the General Council of British Shipping which was made two years ago:—

This country must not be afraid to say to its allies that a strong British mercantile marine is just as necessary to this country as its Navy, Army and Air Force. Not only must this be said, but the country must be prepared to defend it in argument and to require that the Peace Settlement should include effective guarantees against a renewal of the race in subsidies which marked the pre-war period.

sidies which marked the pre-war period.

The history of British shipping shows that new tonnage has in the past been largely financed out of profits and cash representing depreciation. In 1939 the depreciation accounts of many owners showed that trade in the previous decade had been such that full depreciation

had not been earned.

During the war, Government policy has strictly limited the earnings of ships—the war profit whether in cash or service being taken by Government—so that in many cases cash will not be available to replace the obsolescent tonnage, which survived the war, and indeed in some cases replacement of war losses, especially of tramp shipping, will require financing.

It is generally agreed that the problem created by the existence of a great volume of tonnage under the American flag should be the subject of a conference, and it is a matter of wide, though not unanimous, agreement that war-built ships in excess of the probable demand for sea transport after the transitional period should be treated as surplus men-of-war, guns, tanks and other war equipment will be treated. Such ships as are redundant to any probable demand by world trade, after enemy tonnage, mostly obsolescent, has been surrendered and broken up, should be scrapped. The General Council has proposed first that British and American shipowners should confer on the practical peace adjustments of shipping so as to avoid a surplus of tonnage. When a basis of agreement has been reached on this matter, it is proposed that the International Shipping Conference shall meet to discuss "the future organisation of shipping on a basis of private enterprise and free competition subject to reasonable agreement to keep freights on an economic level and the supply of tonnage adjusted to meet the demand, both of which are a necessary condition for the avoidance of future depressions in both shipping and shipbuilding."

THE FINANCIAL PROBLEM.

The first problem which will confront British shipowners after the war will be the financing of the new ships which will have to be built to replace those which have been sunk or worn out by exacting war service. The insurance money paid for ships lost and the depreciation funds which have been built up will not suffice to meet the bill. Colonel T. G. Greenwell, M.P., reduced the problem to simple proportions in a speech in the House of Commons on November 1, 1944:—

"A cargo-liner owner, whom I know, had 18 ships at the outbreak of this war. They were a British line, under the British flag and manned by British seamen. They were running from New York to the Far East and back round the world. Eight of them have 'gone west' as a result of enemy action; for those he will get £1,500,000 (i.e. the insurance money).



That will buy him three ships instead of eight. Is he to hand over five-eighths of the trade that was represented by those eight ships? If so, to whom? To the Americans, undoubtedly. Or is he to borrow £2,500,000 to get his fleet up to the mark? He will be a bold man if he borrows £2,500,000 to-day, with prospects as they are. If he is not able to build up that part of the fleet which has been lost, it will be a great disservice to British shipping and to the British nation."

In ordinary life, if a person borrows an article from some one else, he promises, as a matter of honour, to return it, or if he breaks it or loses it, he replaces it with at least as good an article, even though the price has risen in the meantime. That procedure illustrates the position which has arisen between the Government and the shipowners. As a matter of common honesty, the ships which have been lost by enemy action or marine casualty or worn out by arduous war service under Government control should be replaced. The insurance payments, which were based broadly on pre-war values, will not cover, even if account be taken of the accumulated depreciation funds, the post-war cost of replacement, representing an increase of 100 per cent. or more. This problem would not have arisen if the Government had not specifically decided early in the war that it would pay only 5 per cent. interest, with 5 per cent. for depreciation, so long as shipping was controlled, stating specifically that it intended to postpone consideration of the replacement problem until after the war. Until this problem is settled and some long-term policy for the ordering of men-of-war has been accepted by the House of Commons, there can be no long-term outlook for the shipping and shipbuilding industries, and shipbuilders must be handicapped in concluding contracts for the construction of vessels, whether men-of-war or merchant ships, for foreign customers whom they served before the war.

SURPLUS TONNAGE.

The General Council has declared that it anticipates that when the post-war shipping boom is over—from which they expect not to benefit as they will still be controlled—there will be a mass of Government-built ships afloat. Such tonnage should obviously be scrapped. But it proposes a methodical procedure:—

The solution which offers the best hope of success is for the Governments concerned to recognise that war has upset the economy of shipowning and created a surplus in some types and a shortage in others, and that the surplus ships are not effective substitutes for the shortage. The surplus should be divided into two classes and labelled A—strategic or break-up reserve, B—commercial reserve; the A reserve to take off the market those ships which are or become surplus, the B reserve to be formed of those ships which from their quality and expectation of employment would be regarded as marginal tonnage. To-day no one can foretell the volume of overseas trade, and so the final adjustments must be deferred. The industry is prepared to play its part in making such a scheme workable.

The General Council has pointed out that unless and until a policy for the effective disposal of surplus tonnage is determined, there can be no post-war future for British shipping and therefore no policy for its reconstruction and maintenance. Assuming, however, that the problem of surplus tonnage is dealt with on the above lines, this by itself will not necessarily secure an industry which can provide good and continuous employment for its personnel; that will require a number of additional measures of reconstruction and organisation. Some of these can only be achieved by international co-operation; others are purely national in scope and require the co-operation of the Government. In either case, the methods adopted will need to be varied to suit the conditions of different deep-sea branches of the industry.

Talifornia Salifornia

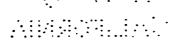
REGULATION OF FUTURE SHIPBUILDING.

The future aim of British shipbuilders and shipowners is the orderly placing of orders for new ships: (a) in the transitional period, and (b) in later years. In consultation, owners and builders have drawn up a scheme at the suggestion of the Ministry of War Transport. Briefly, the proposal is that a joint body will allocate work to the various shipyards with due regard to the needs of the Empire and foreign orders so as to ensure a steady flow of orders and maintain full employment, while at the same time providing owners with replacement tonnage so as to restore their fleets to the strength at which they stood at the beginning of the war. The original suggestion of the General Council was that this body should replace "the licensing authority" which has been exercised during the war by the Admiralty in consultation with the Ministry of War Transport. The scheme was submitted in due course to the Government. On November 1, 1944, the First Lord of the Admiralty stated in the House of Commons that the report explaining the scheme was "a valuable one" but that the Government had decided to establish, in place of the existing war-time committee, a Shipbuilding Committee to advise the Minister of War Transport and the First Lord "on all matters relating to priorities for building as between different types of merchant vessels and on the allocation of shipbuilding facilities between British, Allied and neutral shipowners who may be placing orders." He added that the committee would endeavour to promote co-operation between shipowners and shipbuilders in the ordering of new tonnage, and in arrangements for the wellbeing, efficiency and stability of the shipbuilding industry. mittee would contain representatives of the Admiralty, the Ministry of War Transport, the shipbuilding industry, the shipping industry, and the shipbuilding operatives. "We regard the establishment of this committee as an important step towards ensuring the well-being of both the shipbuilding and the shipping industries," he added.

How the two committees, the one voluntary and permanent and the other with the authority of the Government behind it, and operating only during the transitional period, will work is a matter of speculation. The First Lord mentioned that the arrangement the Government had decided upon was only for the "transitional period" between the conditions of war and peace. But some critics of the scheme have suggested that this may prove to be a Fabian manceuvre with a view to giving the Government more and more control over both the shipping and shipbuilding industries.

In these circumstances, British shipowners and shipbuilders face the future in some embarrassment. They cannot know, because no one knows, what would be the volume of trade to be carried after the war nor have they anything beyond general pledges as to the terms on which the British fleets will be restored; again, as the First Lord of the Admiralty has stated, the extent of the naval orders will depend on the decisions of the House of Commons; and foreign contracts for men-of-war and merchant ships will evidently have to be secured in face of keen competition.

ARCHIBALD HURD.



CHAPTER V.

THE AIR WAR AT SEA.

Ir a curve were plotted indicating the intensity of the struggle between aircraft and sea-craft, it would show many fluctuations during the 280 odd weeks of war that have run up to the time of writing; but it would almost certainly reach its highest point during the year now under review. For during 1944 ingeniousness and technology were carried to extremes as each side sought to alter in its own favour the military relationship between aircraft and sea-craft. The German U-boats were equipped during this period with devices, like the Schnorkel and the Autogiro kite, which made them less vulnerable to aircraft. The special 12,000-lb. armour-piercing bomb and the new mode of delivering it were subjected to operational tests. There was a ceaseless striving by the enemy to institute an effective blockade of the British Isles, and even when Allied shipping losses were low it was known that the enemy was making ready to mount further attacks. It is inevitable that an account of this remarkable struggle should seem to lay emphasis upon the German novelties rather than upon the Allied, for the counter-measures remain largely secret. But it is correct to say that some kind of answer was made by Allied scientific workers and engineers to every German move. Perhaps the simplest way to review the steps in the struggle is to deal first of all with the work of aircraft when used against surface ships and then to turn to the work of aircraft when used against submarines.

The outstanding event of the year in the work of aircraft against surface ships was the series of attacks on the German battleship Tirpitz, culminating in the sinking of the ship on Sunday, November 12, in Tromsö Fjord. The ship had been attacked on many previous occasions, sometimes by Naval pilots and sometimes by Royal Air Force. On April 3 the Admiralty disclosed that the Tirpitz had been attacked by Fairey Barracuda aircraft of the Fleet Air Arm. It had been attacked and disabled by midget submarines in September, and it was lying in Kaa Fjord, at the extremity of Alten Fjord. The attack was made towards dawn by two forces of Barracudas, covered by Seafire, Corsair, Hellcat and Wildcat fighters. Three Barracudas and one fighter were lost, but there were no other casualties. The amount of damage done was difficult to estimate, but it was thought that repairs had been interrupted and that the Tirpitz threat would be neutralised for some months. In an Admiralty communiqué of September 5 information about another attack was given. Hits were claimed, but a smoke screen obscured the target and once again the precise amount of damage was difficult to assess. Eleven Naval aircraft were lost.

After this it was decided to try the effects of heavy bombs of a special design, and on Friday, September 15, Avro Lancaster aircraft of Bomber Command of the Royal Air Force dropped 12,000-lb. bombs on it. It is noteworthy that this was the seventh attack made on the German battleship, the first having been made in March, 1942. She was proving a much more difficult target to destroy than had been expected. The attacks seemed to do damage; but the Germans were quick at repairing it, and while the ship was afloat it remained a continuous threat to Allied supply

lines. In less than a month after the Lancaster attack the Germans were seen to be trying to move the ship, and, on October 29, another attack was made with 12,000-lb. bombs. At least one direct hit was claimed. Once again the Germans devoted themselves to repairing the damage. The Tirpitz was watched closely by photographic reconnaissance aircraft, and then the final attack was made on November 12 in Tromsö Fjord. Twenty-nine Lancasters, each carrying one 12,000-lb. bomb of a special design, discharged their bombs from about 13,000 feet. The aircraft were over the target for five or six minutes and the guns of the ship were fired against them. But only one Lancaster failed to return, and that was later reported as having landed safely in Sweden. The Tirpitz rolled over and sank.

That story of the bombing of a modern battleship does not accord well with the claims of the late General William Mitchell. He, as the result of his classic experiments in the air bombing of a number of old ships, argued that no battleship could live for a moment in the face of air attack. But the Tirpitz resisted every air attack until special bombs and special bombing methods were used. There was, in short, a notable technical advance in the method of bombing heavily armoured vessels before a decisive blow could be struck. Not much has been said about this method, and consequently it can be described only in the sketchiest terms. But as it must be held to be of supreme importance in determining the part aircraft can play in the war at sea, some attempt must be made to

discuss the guiding principles. It has been said the 12,000-lb. bomb was a "special" one. It was designed by Mr. B. N. Wallis, who devised the missile which blew the Mohne and Eder dams, and who designed the Wellington bomber among many other highly successful aircraft. Mr. Wallis has long been a believer in the ultra-heavy bomb of special shape for the attack on well-defended targets such as thickly concreted U-boat pens or heavily armoured ships. His bomb is so shaped, and given such a cross-sectional density, that it attains a very high speed during the fall. That is the first essential to give it adequate armour-piercing qualities. With an ogival head, the bomb is somewhat long and thin, and it accelerates swiftly and, if given a sufficient space of fall, it eventually reaches a speed above that of sound. The bomb itself, however, was but part of the problem, for in order to ensure that its rate of travel at the moment of impact the bombing must be done fairly high. As a matter of fact the height of 13,000 feet mentioned in the official communiqué surprised many who had followed the work done in the development of this form of attack, for they expected that a much greater height would be needed. But even at 13,000 feet the problem of accurate aiming when the target has a projected area of less than 729×118 feet (the approximate Tirpitz length and beam measurements) is difficult to solve. One way of solving it would be to employ some kind of pattern bombing with the probability of hits worked out on a statistical basis. But the number of aircraft needed would then in all likelihood be extremely high. What the exact method was must be left out of this discussion, but the known facts indicate clearly enough that advances in bomb-dropping technique as well as in the construction of the bomb were required in order to obtain success.

So much for the aircraft against the capital ship. Now for another phase of the air war at sea, the aircraft against the merchant ship, minelayer, destroyer and the like.



When the Germans were being strongly pressed in the west they decided to move troops down from Norway to reinforce those facing the Allied armies. Their original means of transport was by ship around the coast of Norway. Not only troops, but also supplies were being sent by this route. One of the duties of Coastal Command of the Royal Air Force (which comes under the operational control of the Admiralty) was to attack this shipping. This was not, of course, the only place in which this kind of shipping had to be attacked, but it presented an interest of its own owing to the difficult conditions in which the attacks often had to be made. The German ships were able to draw into the fjords and to shelter close to steep cliffs in positions which made it extremely difficult to get at them from the air. There was here clearly indicated a need for the

developing of new methods of attack.

The 20-mm. cannon had long been in use against shipping, and for very small vessels it was sometimes satisfactory. But it had not the striking power for larger vessels. Bombs were difficult to aim correctly. Dive-bombing was made impossible in many instances by the circumstances outlined. Larger guns mounted in the aircraft were one of the proposed solutions, and Mosquitoes were fitted with 6-pounder guns. This enabled the aircraft to attack at a much greater range than was possible with the 20-mm. cannon, and if a strike was obtained the damage was proportionately more severe. But there are disadvantages to the use in aircraft of large calibre weapons, and when the rocket missile (incorrectly called in official documents a "rocket projectile," for the essence of a rocket is that it propels itself and is not projected or thrown at the target as is a shell) was sufficiently developed, it began to gain in popularity at the expense of other weapons. The rockets are fitted under the wings, and there may be four under each wing. The methods of using them have varied, but at present the scheme is to harmonise the rockets with the 20-mm. cannon at a given range and for the pilot to use his cannon shells as aiming shots. As the range closes to what he judges to be the harmonising figure, he releases the rockets. Explosive and armour-piercing rockets are in use, but for use against shipping the armour-piercing ones are gaining in favour. They can sometimes punch two large holes in a ship—at ingress and at egress—and their power is sufficient to sink a destroyer.

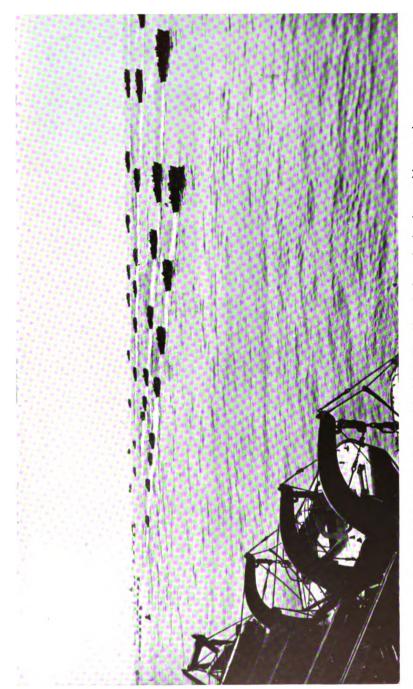
Rocket missiles have undoubtedly increased the power of aircraft against surface vessels. The rockets have the added advantage that they can be used for obtaining hits below the water-line. They do, of course, detract a little from the performance of the aircraft, for any rails or racks or other excrescences under the wings increase the drag and lower the speed. But the advantages greatly outweigh the disadvantages.

We find, therefore, that the year under review has demonstrated perhaps more clearly than any previous year the two cardinal methods used by aircraft for attacking surface ships: the ultra-heavy, high-velocity armour-piercing bomb for use against heavily armoured ships, and the rocket for use against other kinds of ship. Tactically there have been developments designed to aid in the use of these two weapons, and especially at night quite elaborate tactical plans are now used in order to deal with enemy shipping by air attack.

The next thing is to discuss the aircraft versus the under-sea vessel, the submarine. A good deal of information was published early in 1945 about the Schnorkel ventilating shaft and about the way the enemy



Locating mines in the River Scheldt. (British official photograph. Crown copyright reserved.)



Assault landing craft reviewed by H.M. The King before the landing in Normandy. (British official photograph. Crown copyright reserved.)

was using it. Aircraft can spot submarines when these are showing no more than the periscope above water; but their best chance of spotting occurs when the submarine has surfaced. Not only is it then more readily seen from a distance; but the aircraft is then given a longer period to attack. With the smartest drill the crash dive can hardly be done so swiftly as to deny the aircraft half a minute in which to make its attack. The difference when the submarine remains all the time submerged is at once apparent. With periscope and Schnorkel only above the surface of the water, the submarine can go down more deeply a second or two after it has received warning that hostile aircraft are near. The time given the aircraft to make its attack is much reduced, and in practice it became necessary on many occasions for Coastal Command pilots to make their attacks on a swirl in the water and not on the submarine itself—a method far less satisfactory.

The submarine, therefore, makes itself less vulnerable by using the Schnorkel and staying under water whenever it is in parts where hostile ships or aircraft may be watching for it. But there are other fields in which the submarine's chief need is increased range of vision rather than reduced vulnerability. In order to pick up the ships that are to be its prey it must devise means to see farther than is normally possible from a submarine. It must find a way of seeing as far as a ship, and it gains an advantage if it can acquire a range of vision approaching that of an aircraft. Here the Germans turned to their Autogiro kite, a most ingenious device which does confer almost aircraft view upon a submarine when it is on the surface of the water. The Autogiro kite consists in a chair to which is fixed a lifting rotor of the Autogiro or windmill type. That is to say, the rotor is not engine-driven but windmills round in response to the effects of the relative air stream. A wind of fifteen or twenty miles an hour is enough to turn the rotor and to allow it to produce lift. If the natural wind is below this the submarine by cruising on the surface can add to it and provide sufficient relative wind to enable the rotor to lift. The observer then sits in the chair, which has an ordinary control stick in front, and is let up on the end of a cable just as he would be in an ordinary man-lifting kite. For emergency use the Germans fit a device for jettisoning the rotor and for sending out a parachute. Normally at the end of a tour of duty with his binoculars in his high perch, the observer will be drawn down to the deck, the Autogiro kite will be folded up and packed in the submarine, which can then dive if it wishes.

The use of the Autogiro rotor as a kite is well known, and a toy making use of the principle was brought out before the war with the intention of putting it on the market. It makes a more fascinating kite to fly than the old-fashioned one with the fixed lifting surfaces because of the movement of the rotor. Therefore the Germans discovered nothing fundamentally new when they introduced this flying chair as an observation post for their submarines. But they were extremely bright in the way they applied the principle. It is obvious that this kind of thing is of value only on the ocean patrol work, and so it might appear more frequently in the Pacific than round our coasts. Even there its true naval value is most difficult to assess. If there are hostile aircraft in the vicinity the flying of the man-lifting rotor obviously increases the vulnerability of the submarine, for even if the observer cuts loose and uses his jettisoning device, there must be a greater time lag than usual before the submarine can submerge.

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It will be realised from the brief references made to these new German devices that the problems facing the aircrews of Coastal Command have been added to during the year. But, as has been mentioned, these aircrews have also enjoyed the advantage of certain novelties. Their navigational and radar equipment has been under continual development, and they receive many aids in their search for enemy submarines which were not known in the early days of the war.

Something must now be added on the work that has been done to improve the equipment of the Fleet Air Arm during the year. Naval aircraft have not always been of as high a quality as could be wished. The reasons are many and complex, not the least of them being the tendency to add to any machine a host of accessories which spoil its aerodynamic line and cause it to lose speed and climb. There is also a tendency in naval aviation to expect any given aircraft to be capable of a larger number of different duties than are possible consistent with good air performance. Among the torpedo carriers and bombers the Barracuda was in use during the year and the American Avenger. On the fighter side some of the best machines remained those which were originally designed as landplane fighters and were later adapted to deck flying. On D-day the Seafire III made its first appearance. This machine is the first naval aircraft to be specially equipped for the taking of reconnaissance photographs. Seafire IIIs were in the first wave of aircraft to leave a Naval Air Station in southern England shortly before dawn, and their task was target reconnaissance and spotting.

Specifically designed for naval work, the Fairey Firefly has many points of special interest. It is a fighter; but it returns to the Fulmar scheme of carrying an observer-navigator in a rear compartment. This observer does not have guns and the whole of the aircraft's armament is concentrated to fire forwards in the line of flight, four 20-mm. cannon being fixed in the wings. But the observer can perform other duties which are held to be necessary in air war over the sea. The Firefly is somewhat large for a fighter when compared with some land-based machines. It has folding wings and all the necessary deck-flying equipment.

Among the accessories which have been in use during the year and about which general statements are now permissible are devices for assisting the deck take-off of heavily loaded machines. Rocket boosters are fitted, and these can give any aircraft, from a Seafire to a Barracuda, an additional impetus as it accelerates to gain flying speed. This may be regarded as the latest form of accelerator. It has advantages of convenience over the catapult and it is almost certain that rocket-assisted take-off will be extensively employed in deck-flying operations in the There has been in all branches of aviation a steady movement towards higher loadings. Aircraft, which have begun existence at one all-up weight, have accumulated weight in service as attempts are made to increase their striking power and to amplify their equipment. Where land-based machines are concerned some of the additional take-off difficulties are absorbed by the simple process of increasing runway length. Hence we have seen during the war a gradual increase in airfield runway Where carrier operation was concerned, however, the only possible solution was a higher rate of acceleration to flying speed. The aircraft could not be allowed the time to work up to flying speed gradually. Catapults and accelerators have always performed the task of increasing the rate of acceleration, but their disadvantages are many and obvious.

The rocket, therefore, has not only given naval aircraft an important striking instrument, but it has also given them a simple means of getting heavily loaded aircraft into the air from a flight deck.

All these new devices and new methods are likely to be seen in intensive use in the Pacific war and it is to this theatre that interest in the air war at sea may turn during 1945. The battle for Luzon, and especially for the base in Manila Bay, may perhaps be interpreted as foreshadowing the air-sea intentions of the Allied commanders. The way of approach to China and eventually to the mainland of Japan itself has been approximately indicated, and that way must be thrown open by sea-air action on the largest scale. Every new naval aircraft and every new method of dealing with surface ships and submarines from the air will be brought into fullest service. Indeed, the year under review might almost be called

a year of development in these directions in the Pacific.

United States naval aviation has earned high praise from officers in the Royal Navy for its work in this theatre. In fact, a large part of the more intensive carrier work has been done in this region by American carriers and American aircraft. There are signs that the blows that are being prepared will be on such a scale that they will commit forces of naval aircraft much larger than anything yet. Whether the Japanese will adopt the ingenious devices the Germans have used in the attempt to maintain their submarine activity, or whether they will try some other course, is a matter which is likely to be settled more by the psychology of the enemy than by the technical possibilities. The Japanese have not been forward with their naval aircraft although they have adopted a line of development which differs markedly from that adopted by the Americans and the The Japanese are still placing a larger faith in the powers of manœuvre than the Allies. They still seem to believe that a very small, handy aircraft is or can often be a match for a larger, faster, but less handy machine. The latest deck fighter, of which details have reached London, is another of the small, light-weight machines in which the Japanese have specialised since the beginning.

But the field of development which is likely to see the greatest advance when the sea-air war in the Pacific works up towards its climax, is that of ship-borne bombers. The pioneer feat of General Doolittle with his ship-borne Mitchell bombers in the first bombing of targets in Tokyo will have its sequel in further ship-borne operations of a similar kind. Here there will be an opportunity of testing the value of large land-based bombers working at great ranges and smaller, ship-borne bombers working at lesser ranges. The American B-29 bombers have been doing fine work in making attacks on targets situated on the mainland of Japan. But it is impossible to list the weights of these aircraft in tabular form, with each item shown according to weight, without being impressed by the large amount of weight that must be flown to Japan and back to the nearest land base; weight, in other words, which has no military effect.

The ultra-large bomber is a type of aircraft which is certain to be increasingly used in the future. There is every probability that the success of the 12,000-lb. armour-piercing bomb when used against the Tirpitz will lead to the introduction of yet larger bombs. The 22,000-lb. bomb may be tried against naval targets. And when the bomb unit size extends much beyond the present figure, bigger aircraft will be essential to carry it. But apart from this cause of increased size in bombers, there is reason to hesitate before according full approval to the

principle of ever bigger bombers. The B-29 must work from a reasonably secure base, which means that it must be based far from the target it is going to attack. It requires elaborate equipment which must be assembled at this base. But when it reaches the target it will not be able to put down a load greatly exceeding that which a much smaller ship-based bomber might be able to put down.

The B-29 must carry a large crew. It must have a pressurised cabin with the special blowers and other equipment that go with it. It must carry flak suits for its crew, and the defensive armament must be extensive and there must be a plentiful supply of ammunition. The instrumental equipment alone, when added together, represents a formidable weight. The man-hours that go into the construction of the aircraft itself are very numerous. It is, therefore, important to preserve a balanced view when the attack on distant targets is being organised between the long-range, very large, land-based bomber, and the smaller, shorter-range ship-based bomber. Data on ship-based bombers is extremely scarce as yet. The operations have been too few or have been too briefly reported to enable the position between these two types of aircraft to be weighed with any accuracy. But the truth is there that the attacking aircraft will attack with a greater weight when it attacks from a closer base. The closer the base to the target, the better, other things being equal, will be the attack.

Ship-borne fighters have made rapid advances; but ship-borne bombers have not yet been developed with quite the same intensity. Undoubtedly the Pacific war is a stimulus in this direction. It is possible to visualise the rocket-assisted medium bomber taking off from a deck and working at such a range that its attack on the Japanese will be as weighty as that

of the much larger land-based bombers.

Some remark must now be made upon the existing Service organisation in so far as it affects the air war at sea. The work of Coastal Command during the year has been outlined. The Command is under the operational control of the Admiralty but is part of the Royal Air Force. It has been noted that the method has in practice worked extremely well. There has been little or no friction, and all who have been round the Command will agree that a very high degree of efficiency is achieved. But whether the method of creating a Royal Air Force Command and then putting it under the operational control of another Service is logically justifiable is another matter. Very complicated arrangements can be made to work well when there is good will on all sides. But for the best results the arrangement should be clear and logical. It is not for me here to introduce too extensively my views on the future arrangement of the three Services within a single political frame; but I do feel that I may be permitted to ask what future plans there are in view for Coastal Command. When the war against Germany is over, will it remain part of the Royal Air Force but under the operational control of the Admiralty? Will it be returned in its entirety to the Royal Air Force?

The argument in favour of the existing arrangement seems to rest to some extent upon the view that air power should be kept together in one packet because only then can it be dished out to the right quarters at the right moments. This is the argument for the retention of Bomber Command as a Command of the Royal Air Force outside the scope of the air formations directly linked up with the advancing armies. Bomber Command, it is argued, may be wanted one day to attack with heavy bombs the Tirpitz or the submarine pens in Norway, and on the next it may

be wanted to attack German communications in Germany. If it were to be linked to the Army or the Navy it would be less well placed for switching quickly and efficiently to the duty which the war situation chiefly demands. This seems to be a sound argument, but it does lead to many puzzles if pushed too far. And with Coastal Command there is a puzzle which must be studied so that it may be solved in the not too distant future.

That the Fleet Air Arm should be built up at as high a rate as possible and that it should be equipped with the best possible machines, is accepted everywhere. The old resistance to the Fleet Air Arm seems to have died. Few people now seriously ask that deck-operating aircraft should all come under the Royal Air Force. And there is a more general disposition to allow that the Fleet Air Arm should be permitted to have not only training but also operational land bases. But the position of Coastal Command is not so clear. And it is important that its future should be discussed and that a plan should be devised, for only in that way will disputes be anticipated. The present plan has been made to work, and work well; but it will eventually—and perhaps now the time is not very far distant—be succeeded by another, more coherent plan.

Speculation on one other point may finally be permitted: the question of whether the aircraft or the submarine shows signs of gaining an advantage over the other which may be held to be lasting. Until the year under review it has appeared that the aircraft was gaining on the submarine and that it might even achieve such a superiority to it as to reduce drastically its value as an instrument of warfare in heavily defended parts. The improvements in the methods of detection and the advances in armament and the modes of making air attacks were such as to lead to the impression that the submarine was waning in value and the aircraft increasing.

That tendency has not been affirmed during the year under review. In it, using the devices that have been described, the submarine has gained ground relative to the aircraft. Whether it has gained ground in the general sense is less easy to decide. Probably the aircraft is still holding its pre-eminence. But it has been made clear that that pre-eminence demands incessant development in the methods of using aircraft against submarines. The aircraft, in short, enjoys no fundamental and permanent advantage over its under-water enemy. It has had periods of ascendancy and it has had periods during which some new submarine device has caused it to be reduced for a time almost to impotence.

It has been said that the war of 1914-18 was a submarine war, and that had the Germans devoted a rather larger part of their effort to the submarine war they might have won. It has been said that this is a bombers' war and that the submarine has never achieved such a high importance in it as it did in the 1914-18 period. But the situation in so far as it has been revealed by the figures of shipping losses does not confirm so simple a view. The submarine in this war has been playing a notable part, and all the ingenuity exercised in planning the air war against it has not prevented it from being a continuous threat.

But these matters are again partly concealed. It will not be possible to weigh with any accuracy the work that the submarine has done for the Germans and the work that the aircraft has done to counter the submarine for the Allies until a great deal more information than has yet been given is published.

In the year under review aircraft have been forced to meet a renewed

U-boat effort in which the Germans have employed to the full their genius for devising novel methods of war. The counter-measures have shown a gradual improvement. In the war between aircraft and surface vessels aircraft have improved their position, and that applies both to attacks made on heavily armoured battleships and on lighter vessels. In both these cases aircraft are now supplied with weapons and methods of using them which much improve the power and accuracy of their attacks. The year, therefore, has not been a year in which aircraft have had development all their own way; but during it they have made some very notable advances in the war at sea.

OLIVER STEWART.

CHAPTER VI

THE STRATEGY OF THE PACIFIC WAR.*

THE war in the Pacific has been one for which naval history offers no approximate parallel. Campaigns have been waged before by fleets operating at great distances from their homelands and even from their advanced bases, but never before have two major fleets contended with each other across the width of a great ocean. The fact that the stage for the conflict was set on the greatest of all oceans was itself sufficient to deprive this war of all precedent, for up to 1941 the Pacific had had a naval history on the whole appropriate to its name. With the possible exception of Tsushima, no battle between first-rate navies had ever been fought in its waters.

The novelty of distance and setting was more than matched by the novelty which characterized the tactical means for waging naval war in the fifth decade of the twentieth century. Between the first World War and this one, a revolution had occurred in the tactics of war at sea, and this revolution was to continue its progress with unabated pace at least through the first two years of the conflict. It was a revolution in which the airplane and its two corollaries, the aircraft carrier and the antiaircraft gun, achieved a primary if not a dominant position. Finally, the scale and scope of amphibious operations figuring in the campaign was certainly unprecedented in time, though in this respect operations in North African and European waters afforded at least a contemporary parallel.

Under these conditions, the course of the Pacific war was bound to be largely determined on the one hand by the broad distances obtaining and on the other hand by the great disparity in industrial strength and technological skills between Japan and her major opponents. Its tempo was of course influenced by the greater war proceeding concurrently in Europe—a war which absorbed far the major portions of the land and air forces of Great Britain and America and for a time also most of their combined naval power, and which absorbed also almost the entire war-

making capacity of the Soviet Union.

From the hind-sight of early 1945, when the forces of the United Nations—despite their enormous commitments elsewhere—are closing in upon a Japan whose efforts to fend off her approaching doom seem singularly ineffective, the one great mystery of the Pacific war is the fact that the Japanese should have started it. A nation desperately poor in resources, with a pre-war steel production little greater than that of Belgium, dared to challenge two nations each of which possessed a navy greater than her own and one of which was by far the greatest industrial power of the world.

There can be little question that Japan hurled herself into war with the United States and Britain in the expectation that the Germans were about to take Moscow and liquidate the Red Army and that the western Allies would then be completely absorbed in a desperate defence of the

This chapter has been specially written for Brassey's Naval Annual, but it necessarily covers much of the ground of the third edition of the author's book, "A Guide to Naval Strategy," (Princeton, 1944), That edition has not been published in the United Kingdom. So far as it may be regarded as adapted from that work, the adaptation has been made with the kind permission of the Princeton University Press.—Ed.

British Isles or at most in a futile battering of a triumphant and incredibly powerful Germany. The check administered to the Germans before Moscow in the week preceding the Pearl Harbour attack scarcely seemed at that time to be a decisive turning point in the war, and at any rate the die had been cast. The decision to attack had been made weeks, perhaps months, earlier and the Japanese carrier force was already on its way. Since the Japanese were seeing the war in Europe through the rosy spectacles of the German propaganda ministries anyway, their fateful

plunge into war can be more easily understood than condoned.

Then, too, there is the history of the Russo-Japanese War of 1904-5, of which the Japanese were so inordinately proud and which was so conducive to megalomania in a fundamentally frustrated race. No doubt they expected us to behave in the same manner as a corrupt Czarist government which was faced with revolution at home and therefore quite ready to call quits to a distant imperialist venture which was going very badly. The Japanese had no idea that a nation like the United States, whose "materialism" they professed to despise, would be ready to spend blood and unlimited treasure to win back conquered territories in which we had no real political stake and whose economic benefits we could easily enjoy if we simply chose to "do business with Japan." The Japanese are not the only people who are given to misjudging the tempers of other nations. And they are not the only ones who have found cause to rue what they once hailed as a magnificent military success.

The Japanese omission of any attempt to take Oahu at the time of the initial strike which opened the war has been a subject of much discussion. We may be sure the matter was considered in Japanese councils, for the enormous strategic advantages which would have fallen to Japan as a result of early conquest of that base are obvious. But hardly less obvious are the reasons why such a plan should have been rejected. The logistic problems involved in conquering the island and proceeding at once to use it as the major Japanese fleet base would for Japan have been tremendous, and would have greatly postponed descent upon those territories for which she clearly went to war. The element of surprise, upon which all depended and which was actually achieved by the carrier task force which carried out the Pearl Harbour raid, might very well have been lost by a more ambitious amphibious attempt.

And there is no doubt that the degree to which our local air defences were overwhelmed was, if not beyond Japanese hopes and even expectations, certainly beyond that which any responsible commander could legitimately depend upon in his estimate of "calculated risks," particularly where the items risked would necessarily include not only a large invasion force but practically the whole of the Imperial Fleet. It is easy enough to say in retrospect that the boldest move would have been the most logical one for the enemy to follow; but before the event the carrier attack which was actually executed no doubt looked bold enough.

Besides, one must accept with reserve the statements of newspaper reporters and of some excitable military and naval officers that the Japanese could simply have walked in on the day following the attack. True, the American battleships and local air forces were pretty completely disabled, but considerable naval strength remained, and our land forces and the powerful coastal batteries which rim the island were untouched. The Japanese could scarcely at that time have considered the kind of risk which they refused to take even at Singapore. For it was their

unwillingness to risk their fleet against the great coastal guns of the latter base, even after the American battle fleet had been disastrously crippled, which accounted for the time-consuming invasion overland down the

Malayan peninsula.

Incidentally, while the enemy's success against our air defences was probably more sweeping than he expected, it is likely that he had hoped for a greater amount of naval destruction than he actually accomplished. It is almost certain that he expected our aircraft carriers to be present and to become the first victims of the attack. It also seems to be established that he expected a much greater proportion of the total American battleship strength to be at Pearl Harbour than was actually the case. The published maps taken from destroyed midget submarines and aircraft show that among the battleships, carriers, and cruisers which were charted as being at anchor in Pearl Harbour were several which were then operating in the Atlantic! Japanese intelligence, far from being as accurate as press exaggerations have pictured it, was in fact incredibly faulty.

The damage done was nevertheless sufficient to give the Japanese battle fleet for most of the first year of the war an overwhelming superiority to the American naval forces available in the Pacific. That fleet was able to function as a dominant covering force, under which all the Japanese invasions in the western and south-western Pacific proceeded. The Japanese could send their powerfully escorted convoys throughout Malaysia and the East Indies and land their armies without fear of being hindered by superior naval force. Their battle fleet stood poised to intervene against any such menace, and we were powerless to defeat that fleet. Light surface forces and submarines could inflict some injury against the advancing enemy, but the former usually had to be sacrificed

in the process, as the battles off the coast of Java soon proved.

With their slow speed and their wholly inadequate anti-aircraft armament, the nine battleships we had in the Pacific on the day of Pearl Harbour (eight of which were at that base) would probably not in any case have been able to intervene directly in the areas which the Japanese were overrunning. The support of our few carriers and their aircraft, as later events were to prove, would not have sufficed in itself to protect them from the attacks of the large air forces which the Japanese were rapidly establishing in the conquered areas. It had, in fact, been previously decided not to send our battle fleet deep into the western Pacific at the outbreak of war, and we now know that the decision was a wise It might, however, have operated as an aggressive fleet in being, threatening the more extended lines of the Japanese advance and striking against those which reached beyond large land-based air support. That, indeed, is what the intact American carrier forces soon proceeded to do, and it may even be that the freeing of those carrier task forces from the encumberance of old battleships which were a good ten knots slower than the other units used, more than compensated for the loss of their firepower.

As the Japanese launched their attack southward against Singapore and the East Indies in the opening months of 1942, their naval supremacy, and the local air superiorities which were derived from it, made it possible for them to advance at what was then an unheard-of speed. In some instances, to be sure, they paid a bitter price, but all their strategic goals were quickly achieved. And as they advanced their conquests they automatically extended their area of command.

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The pattern of Japanese conquest was a centrifugal one, a moving outward from a centre towards a periphery. This gave Japan the advantage of interior lines, with Japanese forces always disposed between the major concentrations of the forces opposing her and thereby able, so long as she held the initiative, to threaten two or more widely removed points simultaneously while concentrating mainly against one. After the fall of Java, for example, the United Nations were in doubt as to whether the next full-scale Japanese effort would be against India or Australia. Provision against the possibility of major attack had to be made in both places, even though they were separated by thousands of miles and could do little to support each other. The American troops sent to Australia were useless in the defence of Burma. Moreover, Japanese lines of communication to the different fronts were much shorter than those which her enemies were forced to use.

But this advantage contained in itself the seeds of its own dissolution. However far the surge of Nipponese conquest might reach, always beyond its periphery were uncommanded seas over which Japan's enemies were bound ultimately to bring the full pressure of their vastly superior strength. Because of the many islands of the East Indies, Japanese communications ran through narrow seas permitting great opportunities to United Nations submarines, but our own lines ran across the broad Indian Ocean and the immense Pacific. Japan might push wide the walls of her cage, but she was isolated from her allies and surrounded by a hostile world.

THE RIDDLE OF MIDWAY

In the beginning the desperation of our rear-guard actions was alleviated only by some heartening but otherwise strategically insignificant raids, mostly with carrier-borne planes, upon the Marshall and Gilbert Islands and upon Rabaul, Wake, Marcus, Lae and Salamaua. These, carried out by fast task forces, inflicted some damage and loss upon the enemy, but scarcely affected the course of events.* Even the Battle of the Coral Sea—the first naval engagement between carrier task forces exclusively—was hardly the significant event it at first appeared. In it we took at least as well as we gave, and the Japanese movement which resulted in the battle could hardly have been much more than a diversionary thrust to cloak the operation pending against Midway. The Battle of Midway of June 3-6, 1942, was, however, the turning point of the war.

The reason for the Japanese attempt on Midway is, on the surface at any rate, something of a mystery. Midway itself is a small atoll, some 1,140 sea miles distant from Oahu. The number of planes which could be established there could, over that distance, accomplish nothing against Pearl Harbour. The island would have had some reconnaissance value, but it would certainly have received more bombs than it dispatched—for as long as we permitted the Japanese to hold it. Its value as a submarine base could hardly have been great, especially since the Japanese did obtain Kiska and Attu in a concurrent operation. It has been stated that the expedition was a bait to lure our few operative battleships as well as

^{*} However, the very considerable tactical results achieved at trivial cost to ourselves on these raids awakened the American naval leaders to the real offensive potentialities of the fast carrier task force. Following the Pearl Harbour attack, top shipbuilding priorities had been accorded the battleships already under construction, but, while that programme was not permitted to lag, the emphasis tended after the successes of February and March, 1942, to shift to the aircraft carrier.



aircraft carriers into action; but, if so, the Japanese would surely have come with more than four "Kongo" class battleships and four aircraft carriers. The conclusion is unavoidable that the Japanese were really intent on using Midway as a springboard for the conquest of Oahu, and that it was for the latter operation that they were saving the bulk of their fleet.

If so, the operation planned was, no doubt, an instance of the megalomania characteristic of the enemy at that time, for the Japanese had lost permanently some five or six months earlier whatever chances they ever had to take our major Pacific base. Yet the move was only the next logical step in the plan which must have been completed at least in outline even before the war. It may be doubted whether the Japanese ever seriously contemplated an invasion of the American mainland which would end in their "dictating the peace in Washington," to quote the irresponsible boast of Admiral Yamamoto. But, after completing their conquests in the western Pacific, to have taken Oahu and destroyed our remaining Pacific naval strength in the process would have presented the United States with a fait accompli which, to Japanese thinking, could not but create a situation favourable to peace on Japanese terms. It was no one part of the plan which was mad but rather the idea that any plan would work. The crowning insanity on Japan's part was simply the act of going to war.

As it was, the Japanese attempt against Midway played directly into our hands, for our plans for the forthcoming landings in the Solomons were by that time at an advanced stage. The battle deprived the enemy of at least four aircraft carriers and one heavy cruiser, besides inflicting severe damage on other major units, and was, therefore, definitely aus-

picious for the success of our first limited offensives.

On August 7 we invaded Guadalcanal and Florida Islands, and the long campaign of the Solomons was begun. The initial landings were still partly defensive in conception. They were intended primarily to halt the steadily progressing Japanese penetration southward towards Australia and New Zealand, a penetration of which the Battle of the Coral Sea had been but an episode.

THE STRUGGLE FOR GUADALCANAL

The campaign for Guadalcanal presents a good illustration of the "task-force" strategy which then dominated the conduct of both sides. This strategy resulted from a number of factors, chief among which were the vastness of the area of conflict; the existence of numerous, widely dispersed archipelagos which had to be fought over and won; the insufficiency of means, common to both sides, for the realisation of decisive strategic goals (an insufficiency which only we, and not the Japanese, were ultimately able to overcome); and the ascendancy of completely new weapons and ways of fighting.

These factors moved each side to organise its fleet with a flexibility permitting the operation of separate formations. Each of these formations or "task forces," while it could be combined with other task forces if occasion arose, was conceived fundamentally as an independent tactical unit. It went out to execute a specific mission, and in doing so it was likely to act as a replacement for another task force which had accomplished a similar mission. The task-force system was thus a means of

rotating forces in an area where it was impossible to maintain continuous operations. And at a time when enemy air attack was a menace of very large proportions, it presented a means of accomplishing one's ends without exposing to air attack any more ships than it was absolutely necessary to expose.

In World War I there had also been innumerable convoy escort groups which were in effect task forces, and squadrons of varying size and composition were frequently detached from the fleets of both sides for independent and sometimes distant missions. What was new in the Pacific war, however, was a situation in which the fleet as an operational unit almost ceased to exist, its whole body being dissolved into the many task forces which carried out its purpose. For the first year of the war the opposing fleets functioned mainly as a sort of strategic reserve or pool, from which forces were fed out from time to time as the need arose.

The convoy which made the initial landing on Guadalcanal was covered by a very sizeable force—considering the total strength then available to us. The covering and screening groups together included all the aircraft carriers (three), most of the heavy cruisers, and one of the only two modern battleships then operating in the Pacific. Based on New Caledonia, too far away to offer much support, was a land-based air covering force comprising some 280 aircraft of all types.

On the night of August 8 the American carrier group and the one battleship (North Carolina) were withdrawn for their own security. This left the invading force without air cover even before disembarkation had been completed. During the same night the Japanese in a surprise surface attack destroyed one Australian and three American heavy cruisers and damaged a fifth heavy cruiser and two destroyers, but retired without attacking our transports.

This, the disastrous Battle of Savo Island, was followed by a series of small and large engagements both in the immediate vicinity of Guadal-canal and to the east of it. Among the latter were the aircraft carrier engagements of the Eastern Solomons (August 23–25) and the Santa Cruz Islands (October 26), in the first of which a large Japanese force including transports was repulsed. On October 11 occurred the Battle of Cape Esperance, the first of three important night surface engagements, in which we destroyed a good many more Japanese ships than we lost. The latter two of these actions were those of November 12–13 and 14–15, in which battleships participated and in which we sank the only two Japanese battleships destroyed in combat prior to the battle for Leyte Gulf of two years later. Meanwhile, activity of land-based aircraft was almost continuous and exercised an enormous influence, both directly and indirectly, on the naval campaign.

Our possession of Henderson Field on Guadalcanal gaveus not only a base for direct air attack but also a valuable advanced position of reconnaissance for our surface forces. Our planes could scout far to the north of the island, over waters which Japanese naval forces and transports had to traverse in approaching Guadalcanal, while the Japanese were largely denied similar reconnaissance in the direction of our own approach. In the night actions of October 11, November 12–13, and November 14–15, our forces came to the spot with the deliberate intention of intercepting enemy forces whose composition and estimated hour of arrival had been reported by our air scouts.

Thus we were able to bring our available ships to the scene when

needed, and upon arriving there they were likely to enjoy all the advantages of surprise. In that way our surface forces were able—together with our land-based bombers and torpedo planes—to exercise a continuity of pressure, though not always of control, out of all proportion to the total time they spent in disputed waters. On the morning after the night action of November 14–15, 1942, in which battleships participated, on both sides, the U.S. destroyer Meade was the only warship remaining on the scene. She completely dominated the area, leisurely shelling some Japanese

transports which had been beached on the preceding day.

None of the main naval actions was in itself decisive, though those of mid-November were as close to being so as any. Both sides continued throughout to send more men and supplies into the island, although the Japanese could do so only at an inordinate cost in fighting units and transports. Both sides also carried out numerous bombardments, mostly at night, of opposing land forces. On November 30 occurred the Battle of Tassafaronga, a near-disaster for us. In that battle we lost the heavy cruiser Northampton, the fifth United Nations heavy cruiser lost in the area, and suffered severe torpedo damage to three other heavy cruisers. Fortunately, however, the Japanese vessels involved, presumably destroyers, failed to get home to report the havoc they had caused. On December 7, 1942, a force of six Japanese destroyers escorting a large transport was met by nothing greater than a handful of motor torpedo boats, which nevertheless proved sufficient to rout the Japanese with the loss of one destroyer.

Thus, real naval command was never in any sense established, and any local superiority was likely to be evanescent in the extreme. What won the naval campaign, thus bringing victory in the campaign ashore, was our superior fighting and staying power in a simple contest of attrition. The Japanese saw that they were losing more ships than they could afford to expend for just one remote island. They saw also that we had gathered enough strength in the area to continue the competition indefinitely. These facts finally persuaded the Japanese to quit. And the most tangible advantage we reaped from the fight over Guadalcanal was precisely that in waging it we induced them to engage in a contest of naval attrition—a contest in which, because of our qualitative superiority and our immeasurably greater naval construction and repair programme, the odds were in our favour.

By the time the Guadalcanal campaign was ended, the tonnage of sunken warships lying off the island was considerably greater than that lost on both sides at Jutland. Many other naval vessels had suffered severe damage in the area. The Japanese had lost more heavily than we, and had in the end been forced to acknowledge defeat; but the cost of our victory had not been small. Had we been able to begin the campaign with all the forces which we dispatched to that area before it ended, the results would undoubtedly have been far different. Only at the very end of the campaign were we in a position to intervene in the active theatre with a force larger than the largest available to the enemy. Such a force, wherever it can be maintained, gives true command of the sea, and the achievement of command has always been the first aim of the naval offensive.

JAPAN'S REVERSION TO THE DEFENSIVE

In later fights the Japanese showed more caution. Though we continued throughout 1943 to advance up the ladder of the Solomons, retaking also Attu and Kiska in the Aleutians, the Japanese gave us little opportunity to sink or damage any of their important warships. November, 1948, we descended upon the Gilberts and took Tarawa and Makin, we opened a new phase of the Pacific war. For at the Gilberts we began an operation with a "task force" which was really an entire battle fleet, one capable of engaging and defeating the whole Japanese Fleet. And that fleet remained on the scene until the conquest of the islands we invaded was consummated. This marked, in a sense, a return to ancient principles, the validity of which was thereby re-established. The Gilberts' invasion saw also the first of our great preparatory bombardments from the sea, bombardments which were to grow rapidly more impressive and effective as the war progressed. In our invasion of the Marshalls only a few months later, we opened our attack upon the single atoll of Kwajalein with the direct fire of no fewer than thirteen battleships.

By this time the Japanese Navy had shot its bolt as an offensive force. The bulk of the enemy fleet had been withdrawn to Asiatic waters, where it was held in reserve for some decisive issue or occasion of opportunity. The Japanese meanwhile attempted to stay our progress as best they could with small local air groups and occasional light surface forces, besides, of course, their land garrisons, which being isolated were considered expendable. Their submarines were being forced more and more into the task of supplying with at least a trickle of goods the otherwise inaccessible enclaves of troops whom we bypassed in our steady advance. Japan was paying the price of having recklessly ferried armies across seas over which she could not maintain control. And the Japanese Navy adopted a fleet-inbeing strategy which seemed subsequently to grow ever more abject.

The Japanese refusal to risk their fleet in action despite our menacing and ever-accelerating advance across the Pacific throughout 1943 and early 1944 caused considerable mystification in America among observers who persisted in overlooking the obvious. Certain imaginative writers sought to answer the burning question of "Why doesn't the Japanese Navy fight?" by propounding a theory which attributed to the Japanese a fundamentally different ideology concerning sea war from that held by the strategists of the Western powers. According to this doctrine the Japanese Navy had always shunned the Nelsonian tradition of decisive actions for command of the sea. By an extraordinary intellectual tour deforce, the Battle of Tsushima was re-written to make it appear not an exception but actually a confirmation of this strange thesis. The Japanese, it was held, regarded their navy as merely "a floating wing of a powerful army," existing exclusively for convoy escort.

One can find nothing in the writings or pronouncements of responsible Japanese naval officials to support such a doctrine, and an unbiased reading of Japanese naval conduct, especially during the first year of the present war, should have prevented any such misconception from developing. As Admiral Sankichi Takahashi, former commander-in-chief of the Combined Fleet, put it in a speech at Kokura in February, 1944: "In sea battles the power that gains command of the seas last wins, and annihilation of enemy naval strength is the most important way to attain this end." The Japanese have always believed that. They believe it still, and the conviction must be considerably disheartening to them.

The enemy avoided action simply because he had no alternative. Here was a nation which was third-rate industrially, and which possessed only an obsolescent and already grievously damaged fleet, in mortal combat with a nation which was in the process of pulling out of the hat a new and incredibly powerful navy. By the spring of 1943 the great industrial power of the United States was already beginning to tell. Not only had we restored, in completely modernised form, most of the warships damaged at Pearl Harbour, but we were also commissioning new ones at a rate which must have stunned the enemy. And when the Battle of the Atlantic swung definitely in our favour in the spring of 1943—and the net increase of merchant ship bottoms began later in the year to exceed 1,000,000 gross tons monthly—the chief bottleneck to our offensive effort was pushed wider. Meanwhile, too, the British Navy was dispatching an ever-increasing proportion of its great strength to the Far East to second the already dominant American Fleet. Small wonder that the Japanese tried to conserve their warships! All navies do, but the Japanese Navy had more reason to than any other.

AMERICAN GROWING SUPERIORITY

Moreover, our margin of superiority kept growing constantly, both quantitatively and qualitatively. Our quantitative growth, in fact, entailed in itself an increasing qualitative advantage, since accretions to our strength always mean an increasing proportion of new ships and planes in our Fleet. By the middle of 1944 our Fleet was already predominantly new, while the Japanese Fleet remained predominantly old. In battleships, for example, our ten new ones alone were more than equal in combat strength to the whole Japanese battle line of old and new ships. Our new aircraft carriers of the Essex class were not only far more numerous than Japanese carriers of comparable size but also much superior. In light carriers, escort carriers, heavy and light cruisers, destroyers, and the all-important auxiliaries of the fleet train, our expansion was tremendous, while the Japanese were not even able to replace losses, except possibly in carriers.

And the American conception of the "balanced fleet," pushed through against a public opinion misled by air extremists, was coming into its own. The aircraft carrier operating in large concentrations proved to be a very different thing from the carrier operating singly or in small groups. Such concentrations demonstrated their ability both to maintain their own security against enemy air attack and to command passage for the Fleet through and among the enemy-held island groups in the Pacific. Thus our Fleet had restored to it most of its old freedom of movement. And with our carriers we combined fast new battleships, which not only "ran interference" for the carriers but functioned as offensive agents on their own. The whole produced a force able to assert itself anywhere on the seas against any kind of enemy opposition whatever.

The Japanese, on the other hand, having gone all-out for the carrier after Pearl Harbour, the Coral Sea, and Midway, sought to fill their needs in large vessels of this category not only by converting liners but also by wholly or partially converting battleships. Perhaps with their pressing need and lack of resources there was little else they could do. Yet the Japanese rejection of "the balanced fleet" was in part ideological. The same Admiral Takahashi already quoted declared on March 4, 1944, in a



speech at the Kyushu Steel Works, that the Japanese battleships ought to be scrapped and their steel used for the construction of more aircraft!

Thus the Japanese tended to put all their eggs in one basket, which might not have served them so ill if the basket had been more adequate. But their carriers were insufficient in number, their planes grossly inferior in performance, and most inferior of all in comparison with the magnificent equipment of our own ships was the quality of their anti-aircraft armament—a vital, though usually overlooked, component in air-combat potential. In less than two years of war the United States Fleet had benefited from a complete revolution in the power and effectiveness of its anti-aircraft defences. As a result, in the two battles of the Philippine Sea the Japanese carrier planes proved almost impotent against American combat vessels, while American carrier planes demonstrated their continuing ability to carry out deadly execution of enemy ships.

Nor can one forget personnel. Making all due allowance for the bias of national pride and for the indisputably superior quality of our material, it is by now clear that American strategic and tactical conceptions have been throughout the war far superior to those of Japanese naval leaders, and that the American pilot or ship's crewman had been on the whole a

better man at his job than his Japanese counterpart.

Japanese naval spokesmen have for many months openly admitted the inferiority of their fleet in all categories of naval vessels. Occasionally, as for example at a public round table reported in the magazine Fuji for September, 1943, Japanese airmen admitted the inferior quality as well as the hopelessly insufficient number of their aircraft. Yet there could be no doubt, their "Bushido" spirit being what it is, that the Japanese would never surrender with an even partially intact battle line. Somewhere along our line of advance it was sure to be thrown in. The question was, where? Until it was met and disposed of, every advance we made had to be a major fleet operation, and we could extend ourselves only as fast as we could extend the operating radius of our ships—which meant converting newly-won positions at utmost speed into operating bases for our combatant fleet and for its tremendous train. That we were able to advance as rapidly as we did is a miracle of modern naval logistics.

Our invasion of the Marianas in June of 1944 finally presented the Japanese Navy with a challenge it could not ignore. The result was the First Battle of the Philippine Sea, which because of its supposed inconclusiveness was written off by a disappointed press as an abortive action. But the Japanese had never intended to let us have a surface action in those open waters, for while they could not afford to lose Saipan and Guam, neither could they afford to lose their fleet in defending them. They did, however, come out with the bulk, perhaps the whole, of their available carrier strength and with those few battleships fast enough to provide cover without becoming an embarassment, and the resulting action was a disaster to the Japanese. A very considerable portion of their fleet carriers was sunk or severely damaged, as became evident in the larger action of four months later, which was notable for the paucity of Japanese carriers involved. The replacements for the trained pilots lost must have reduced the effectiveness of those carriers which remained. Destruction and damage to other categories were perhaps greater than we at first believed.

After this debacle the Japanese were forced to rest their remaining hopes primarily on their land-based aircraft. As soon as we came within their "basic sea area," enemy propagandists constantly reiterated, our



Battle of the Coral Sea. U.S.S. Lexington on fire. (U.S. official Navy photograph.)



Battle of Midway. U.S.S. Yorktown hit by bombs. (U.S. official Navy photograph.)

Fleet and with it our hopes of ultimate victory would be crushed by Japanese land-based air forces. The Japanese Fleet would then enter the battle to consummate the destruction and would thus again become cock-of-the-walk in the western Pacific. It was the whole-hearted commitment to this prospect which explains in part the unprecedented—even for the Japanese—build-up into a great propaganda victory of the "Battle of Formosa," into which the Japanese Fleet never entered and which was in fact an unmitigated defeat for the Japanese air force.

There was nothing essentially novel in this strategic conception. It was the *Krafteausgleich* theory of the German Navy in World War I translated into a new tactical environment. Its realisation depended basically on the presumed superiority of "unsinkable aircraft carriers" to those which float and move. And vociferous proponents of that superiority

were to be found in the United States as well as Japan.

Our successful assaults on the Gilberts, the Marshalls, the Marianas and the Palaus, as well as our conquest of the archipelagos in the southwestern Pacific, might have given some pause to exponents of the doctrine that naval forces could not contend with land-based air forces, but in each of those cases we were attacking islands of very limited area and therefore capable of operating only limited numbers of aircraft. The distances by which they were separated from each other precluded effective mutual support. And being both short of aircraft generally and obliged to disperse those they possessed over wide areas, the Japanese were not even able to provide their distant outposts with the number of planes which those bases could have supported.

In the Ryukyu-Formosa-Philippine area, however, we were for the first time assaulting what was in effect a large land mass which, because of its position, was the key to the enemy's whole strategic system. It could be expected to be supporting a very substantial part of the enemy's total air force, which, indeed, from the toll we took was found to be the case. In the seven weeks preceding our landings in the Philippines on October 19, 1944, more than 1,900 Japanese land-based airplanes were destroyed in air combat and on the ground at the cost of about 160 of our own planes lost in combat (that is, not including operational casualties). In addition, our carrier aircraft chopped off during that period at least another 20 per cent. of Japan's already crucially attenuated shipping, besides inflicting considerable damage on shore installations. The immediate result was not only the neutralisation of enemy air opposition to our landings but also the immobilisation of the Japanese garrisons dispersed among the islands and the serious reduction of enemy means of reinforcement.

Our naval fighter planes operating from our carriers had proved tactically superior to the best land-based planes which the Japanese were able to send against them. This advantage no doubt surprised many who had assumed that carrier planes, because of special limitations in design, must inevitably be inferior to land-based planes. But it is always a question of whose planes one is talking about. While our navy Hellcats and Corsairs do not have quite the margin of superiority in flying performance over the best Japanese fighters that our Mustangs and Thunderbolts enjoy, they have margin enough, and they have a comparable advantage in fire power and armour.

Besides, in the Ryukyu-Formosa-Philippines operations, which covered a large area, we usually managed to make ourselves numerically superior to the enemy at the particular point of attack. Our great carrier

groups have provided our Navy with what is the only truly mobile air force of any size in the world. It is an air force in which not only aircraft themselves but also their floating bases are capable of rapid movement—and it enjoys all the advantages of mobility, such as ability to concentrate and to achieve surprise. The enemy's ability to combine or co-ordinate his separate groups of aircraft, on the other hand, depended on forewarning and on the distance between his airfields.

As our operations in the area approached their culmination, Admiral Soemu Toyoda, apparently misled by the mendacity which seems to characterise not only the Japanese Propaganda Ministry but even more the field reports of Japanese commanders of all echelons, sent out his fleet to have a look. What it saw was not good. The United States Third Fleet, far from having been largely destroyed, still enjoyed complete possession of the overwhelming fire and air power with which it had approached the enemy coasts, and it was obviously spoiling for a fight. Discretion seemed, for the time being, to be the better part of valour.

There the matter might have rested had not our landing on Leyte followed hard upon the air attack. Japanese political and military leaders had several times publicly acknowledged that loss of the Philippines must inevitably mean loss of the war for Japan. For not only would the Philippines present us with a great staging base for future operations against the Chinese coast and ultimately Japan itself, but the establishment of our naval and air forces in that archipelago, together with our earlier seizure of bases in the Marianas and the Palaus, would enable us to sever Japan's communications with all the lands between the Bay of Bengal and the Solomon Sea. And these lands contained, besides the vast wealth of strategic resources for which Japan had originally gone to war, the cream of the Japanese Army. No nation could afford such a loss. And, again, Japan could afford it less than any other.

It was simply a case of now or never. A more critical strategic situation could not arise unless Japan itself were being invaded, and the Japanese could not wait that long to use their fleet. The ratio of strength would never be less unfavourable to them than it was now. On the contrary, with our construction programme continuing at top delivery level and with the collapse of Germany impending, further delay might mean the loss of their last chance. Besides, here at last was their chance to fight a sea action within range of what were—or rather had been—large land-based Japanese air forces.

APPROACHING THE END

Thus the Japanese Fleet moved in for the showdown fight in what was subsequently to be named "the Battle for Leyte Gulf." The enemy undoubtedly threw in all he had in major combat units—all, that is, which was not immobilised by previous damage. And as a result of the battle, the fighting strength of the Japanese battle fleet was approximately halved. The half which escaped, moreover, did so in a very bad state of repair. The most important of the vessels which the enemy salvaged from the fight were six battleships, of which only one was modern. Two of the remaining five were hermaphrodites—neither battleships nor carriers but dubious combinations of the two. The enemy lost all the aircraft carriers present (which, to be sure, were hardly an impressive group) and most of his heavy cruisers. Moreover, several of the enemy naval vessels which escaped

from the battle—and a few others besides—were to fall victim in the succeeding weeks to American submarines. By the end of 1944, the Japanese Navy was probably inferior in material strength to the Italian

Navy at the time of the latter's surrender in September, 1943.

The most important of our own casualties in the battle was the light carrier Princeton, one of nine of the Independence class which had been converted from Cleveland class 10,000-ton light cruisers during construction. The Princeton, incidentally, lost on October 23, 1944, was the first American combat vessel of greater than destroyer size to be lost to enemy air attack in twenty-one months of war—the first, that is, since the cruiser Chicago was sunk off Rennell Island on January 30, 1943. Our other losses in the battle itself were two escort carriers, two destroyers, and one destroyer-escort. Other vessels were damaged. The sum of our losses as compared with that of the enemy and especially with our existing strength can be described only as slight. The battle was not a Jutland but a Trafalgar. For, as a result of the battle and its aftermath, the status of Japan as a major sea power was definitely ended.

Our undisputed naval and air command in the vicinity of the Philippines made possible the rapid consolidation of our hold upon Leyte, from which we subsequently leaped to Mindoro and then to Luzon. As this article is being written (February, 1945), the American forces have already taken Manila and seem to be progressing with unexpected rapidity to the liberation of all Luzon. With Luzon in our hands, the next step would seem to be the seizure of another and final jumping-off base for the invasion

of Japan itself.

It was Julian Corbett who pointed out that disputed rather than commanded seas are normal in war, and that the first aim of the naval offensive was to secure command. The history of the Atlantic campaigns in both world wars has tended to obscure this truth, for in both cases the dominant British Navy operating from an island base hard off the continent of Europe was able to erect at the outset a strategic structure which assured to Great Britain and her Allies the benefits of command in the Atlantic. The German U-boats could and did gnaw at the framework of this structure and effected great damage to it, but its essential foundations were never imperilled. Throughout both world wars, British and allied shipping continued to traverse the Atlantic while German shipping was, for all practical purposes, swept completely from it.

The war against Japan, on the other hand, has been characterised by a three-years' struggle for command of the Pacific. During the first six months the Japanese rapidly expanded their area of command until it embraced most of the Western Pacific as far as the Solomon Sea and the Aleutians. Their bid to advance their command to the Eastern Pacific was, however, doomed at Midway. The months which followed saw the American Navy, with the valuable assistance of the British, shift to the offensive. At first the progress towards enlarging the American area of command was painfully slow, but the single calendar year of 1944 was to see us enter the Marshalls and leap from those islands thousands of miles across the Pacific to the Philippines. Following our return to Luzon, the whole of the Pacific, with the possible exception of part of the home waters of Japan itself, could be regarded as a United Nations sea. The struggle for command had been decided in our favour.

To be sure, an enormous naval task remained. The landing of hundreds of thousands of American and Allied troops on the shores of the Japanese

home islands was an enterprise in many respects more formidable than the landing on German-held France in June, 1944. But the remaining problems were mainly logistic and tactical. The stage was set for the final act; and from the broad point of view of maritime strategy, the plot of the play had already been entirely revealed. The villain of the piece was cornered and clearly doomed; and while he was still dangerous in his desperation, there was hardly more to be shown than the spectacle of his death throes.

BERNARD BRODIE.

CHAPTER VII

STRATEGY AND PROPAGANDA IN GERMAN NAVAL THOUGHT.

"The First World War has opened the eyes of many amongst us—if not yet by any means of all. But of the experiences we gained in it we have drawn the logical conclusions for our guidance, not only during the present conflict, but—and this is decisive—during the period of intellectual and material preparation which preceded it. On this foundation, which differs profoundly from that of 1914, the new German Navy has entered this new World War, despite its numerical weakness, with a clear ultimate objective which it has pursued from the first day onwards with determination and daring and which it will continue to pursue until final victory.

The path to Sea Power is steep; and difficult for a nation which since the decline of the *Hanse* has found itself exclusively determined by continental interests and in its schools has heard much indeed of glorious campaigns on land, but little of naval wars and World Power. Despite all this our leadership can to-day survey with profound satisfaction, how much we have learned out of the last World War—so much that when one day our banners will come home out of this struggle crowned with victory we shall be justified in saying: We have won this War because we lost the First World War."

This confident belief in victory through a superior mastery of present day naval warfare, born out of the revulsion from the first utter misunderstanding, with which Admiral Assman, Head of the German Navy's Historical Service concludes his outstanding essay. "Transformations of Naval Warfare," in Nauticus 1943, is not propaganda; it is the conviction that has determined the German Navy's strategy during this conflict and which we must try to understand in order to touch the innermost nerve beneath its many seemingly inexplicable vagaries.

GENERAL CHARACTERISTICS OF GERMAN NAVAL THOUGHT.

In order, however, to understand the decisive significance attributed by Assmann to this radical change in the German Navy's outlook, it is first necessary to appreciate the exceptional rôle which theoretical consideration have from the outset played in determining the course of the German Navy. For this exceptional significance of theory is not merely the expression of the well-known general German belief in abstract principles, but the result of a unique combination of a number of quite peculiar circumstances.

First and foremost, the German Navy has been essentially an artificial creation. As Admiral Assmann has well expressed it, it had no roots in the past and despite the rapidly growing increase in German overseas trade, shipping and colonies, no clear-cut military function either. Its leaders saw themselves, therefore, continuously faced with the necessity of developing a theoretical basis for its existence in order to justify it to the Reichstag and establish for themselves a goal towards which to bend their efforts.

The German Navy, moreover, did not grow up in a vacuum. had to develop in a nation which had lost all contact with naval warfare and its peculiar problems, and at the same time in the shadow of an army, which had been foremost in developing the theory of modern strategy and which owed its rise, after 1870-71, to the rank of the leading military power to a large extent precisely to that superiority in theoretical clarification and intellectual training. The combination of these two (or three) factors turned the German Navy not only from the outset towards the elaboration of a similar comprehensive theory of its own but also, what was by no means the inevitable consequence of this, toward modelling itself, consciously and even more unconsciously upon the familiar and proven methods and concepts of German military theory. Thus we find the German school of naval thought not only from its earliest beginning bent upon a parallel comprehensive and systematic analysis of naval warfare but actually seeking to achieve this not so much through the inductive study of naval history, as had been the case both with Mahan and the British school, as by the systematic comparison of conditions obtaining on land and at sea. Properly handled, this peculiar deductive approach might well have proved a most useful complement to the empirical method. But under the existing circumstances, without the indispensable balance of a firm grip upon the facts, it tended to mislead German naval writers into pressing naval warfare into a conceptual framework evolved out of the totally different conditions obtaining on land, or else into purely abstract discussions and distinctions which gave their work a strange atmosphere of unreality.

Moreover, their attempt to trace the differences between these two forms of warfare back to the radically different nature of the two geographic media in which they had to operate, land and sea, led German naval thinkers straight into the arms of the great anthropo-geographical school of Ritter and Rätzel, which at the turn of the century came to meet them halfway. The rhapsodic language in which Rätzel extolled the grandeur of sea power, served indeed to inspire their thoughts with a grandiose sweep; but, equally to carry them away into sentimental flights of phantasy, and to that blurring of the dividing line between fact and fancy, vision and wishful thinking, sober strategic analysis and propaganda, which has remained such a characteristic, and fatal, trait of German naval thought

down to the present day.

TIRPITZ

All these elements of German naval thought, which we find most clearly expressed in its earliest representatives, Rittmeyer, Stenzel, Valois, and above all Maltzahn, form the background of the great rise of the German Navy from the turn of the century to the First World War. the dynamic impulse behind that rise came from a widely different source and personality. Admiral von Tirpitz, whose ideas were to determine the German Navy's course, outlook and fate far beyond his own tenure of its secretaryship (1897-1916), was a brilliant tactician and organiser, a born leader of men; a past master of intrigue; resourceful, indefatigable in the pursuit of his aims, utterly unscrupulous in his methods. But he was no systematic thinker, no man capable of achieving a broad balanced view of the tremendous issues into which he engaged himself with boundless assurance and self-confidence; no strategist; least of all, what his adherents never tired of acclaiming him, a statesman.

Thus, the set of ideas which, while Chief of Staff to the High Command. he evolved in the early nineties as an ideological basis for the revival of the German Navy from the state of confusion and torpor into which it had tended to fall between the impetuous and erratic influence of the Kaiser and the indifference of the Reichstag, was a strange hodge-podge; distilled out of a grossly misunderstood Mahan, a correspondingly distorted conception of naval history, particularly British naval history, and of his own curious mixture of unlimited ambition, enterprise, and almost pathological Unfortunately, a spell of duty in the Far East (1896-97) in command of the German cruiser squadron in those waters gave him first hand insight into the rivalries of British and German merchant firms for that rapidly opening market, and it convinced him once and for all, not only of the general correctness of his belief that henceforth the rank and the political relations with each other of the powers would be more and more determined by their share in the new imperialistic ventures, colonies, overseas trade, shipping, above all, sea power, but—what he had not yet been certain of up to that time—that in all these respects Great Britain was rapidly developing into the natural rival and enemy of German oversea interests; an enemy, so he was convinced, who would not hesitate to crush once again a rising mercantile rival by brute force, before his competition became truly dangerous.

Once this conviction was firmly established in his mind, Tirpitz, with characteristic promptness and ruthlessness set out to devise the measures necessary to adapt the German Ship of State to the requirements of the new course, as well as to ward off that vital menace. The whole existing political framework of Germany was to be swung around; the Wilhelmstrasse virtually to be replaced by the Reichs Marine Amt, which was to become the new dynamic centre of German policy, the spearhead of her rise to the status of a true world power; co-ordinating all the manifold "overseas interests," colonies, colonial troops, overseas trade, mercantile shipping, the navy in its hands. The obsolete continental frictions with France and Russia were to be composed; these powers were to be convinced that their real antagonism lay with their common imperialistic rival, Great Britain, and if possible brought into a united front of the continental powers against the latter's encroachments; even the United States and the rising power of Japan were to be brought into line. Above all, as Tirpitz, while ever ready to make flèche de tout bois, distrusted any security not based on his own strength, the German Navy was to be built up as speedily and as secretly as possible to the point where it would be able to offer absolute guarantee against any such "preventive trade war," with complete equality as the final, far-distant goal (" Femziel ").

It was with this grandiose and fantastic programme in his mind that Tirpitz in his fateful interview with the Kaiser on June 16, 1897, agreed to take over the Secretaryship of the Navy and attempt to push a big naval programme through the suspicious and largely recalcitrant Reichstag on the express understanding that the German Navy was to be built up "against Great Britain." The Kaiser gave his assent to that vital condition so readily and lightheartedly that Tirpitz found himself impelled to repeat his question in order to make sure that the Kaiser had quite understood, what he was committing himself to. As a matter of fact, the Kaiser, neither then nor at any later moment ever realised either the full extent of Tirpitz's plans or the implications of that commitment, and it is only

fair to his memory to point out that if he ever had done so, he would in all probability have dismissed the latter. But, as things went, Tirpitz, who had entered his new office with the most exuberant aspirations, very soon had to realise that the Kaiser, while full of vague and grandiose visions of a mighty German Navy and dreams of world-wide sea power, was anything but ready even to listen to, far less to endorse, such a sweeping and utterly fantastic reorientation of German foreign policy. One by one he had to bury his hopes and by the turn of the century found himself practically confined to the modest task for which the Kaiser had called him into office, the building up of the German Navy itself.

But this restriction of Tirpitz's original vast and ambitious schemes to the seemingly mere technical task of building up the German Navy did not deprive his work of its fatal political orientation. Baffled in his wider aspirations, he was nevertheless able to carry out over seventeen years (1897–1914) his plans for the building up of the German Navy "against Britain"; with the result of imparting to German foreign policy, which he was unable to control as a whole, a sinister undercurrent, all the more vicious because impenetrable to the outsider. For by no stretch of their imagination could the British statesmen, who during those years strove so hard to bring about a lessening of the tension created by the German Navy's more and more menacing expansion, have conceived that the men who officially were responsible for it, neither wished its strategic implications nor even understood them.

In a very different sense from that imagined by them, the Kaiser was indeed the fountainhead of the whole German naval policy. It was his almost pathetic infatuation with the dream of a great, powerful navy which provided the wily old seadog Tirpitz with the infallible Archimedean lever by which to overthrow any opposition, domestic or foreign. Whenever Tirpitz saw a major obstacle he had only to ask for an audience and remind the Kaiser that his historical lifework was at stake and that the arrogant British presumed to dictate to him the size of his Navy in order to provoke the desired outbreak against die ganze verfluchte Dreadnoughtschweinerei, as well as the necessary Imperial Rescript to the Chancellor.

That Tirpitz, playing with consummate skill upon the Kaiser's weaknesses, was able from this secure foothold to defy and defeat all his internal and external enemies, was due not only to the Kaiser's autocratical position in all matters relating to his armed forces, but above all to the fact that, of the men Tirpitz had to deal with, none had any understanding of sea power and its strategical problems. The Kaiser himself, for all his grandiloquent outbursts on Germany's need for sea power, was in reality a child in such matters; while Bülow, Bethmann and the others, and above all, the Reichstag, did not even aspire to understand naval policy and Moreover, in his famous "risk-policy," Tirpitz had found the master instrument, whereby to present his plans in a plausible form and yet to conceal completely their real significance. The measure of its success can be gauged from the facts that not only did the Kaiser naïvely accept it as the magna carta of his naval policy—but that to this day it has been universally accepted, discussed, condemned and defended, by students of that period as well as of naval affairs, as the essence of his policy despite the fact that both he himself and his closest collaborator in its formulation, Admiral Hollweg, had openly confessed to it as a mere camouflage; and despite the further fact that in 1911, Tirpitz had made a definite attempt to repudiate it and replace it by the new formula of a

"fair defensive chance." Outwardly, the "risk theory," as officially formulated in the second Naval Law of 1900 was harmlessness itself. By the curiously abstract reference to even the strongest sea power, it sought to maintain the fiction of a purely abstract basis as well as to point to Britain, yet avoid calling her by name. Its objectives could not possibly be more modest. The objective for which the German nation was asked to vote and construct the impressive total of thirty-eight battleships was not a successful attack upon any opponent, not even "a fair defensive chance," but merely the strength to inflict in defeat such losses as to make "even the strongest sea power" pause twice before incurring such a risk. What he really had in mind, when he first conceived this famous formula it is difficult to say, as his whole policy was still in the process of crystallising and the available evidence is conflicting and contradictory. But between 1904 and 1906, two events completely transformed the international balance of sea power and ended by presenting him with a wholly unforeseeable chance, which he was not slow to perceive or to exploit to the utmost. The first of these was the concentration of the bulk of British battle fleet strength in the North Sea forced upon Sir John Fisher by the rapidly growing menace of the German Fleet to the security of British home waters; the second the inauguration of the dreadnought policy, which discounted the existing overwhelming British superiority in older battleships to a large extent and restored competition "from scratch." By pushing the construction programme of the German Navy in two Subsidiary Laws of 1906 and 1908 to a height of four capital ships per year, Tirpitz saw here a unique opportunity to impose on Britain both a concentration of her forces which threatened to deprive her of all strategic freedom of movement as well as a building competition in capital ships, which, as he believed, she would not be able to stand over a prolonged period, in the expectation that these would force her to come to an agreement with him on such terms as he deemed adequate to safeguard once and for all German oversea interests. In the autumn of 1908 he appears to have believed himself very near to that goal; at any rate he was actually looking around for an unobtrusive pretext to go over in order to be "on the spot" for the overtures which he expected, when in the following spring the belated recognition of that threat induced the British government to the abrupt raising of their building programme for that year from two to eight capital ships and thus at one blow to overthrow all his calculations and hopes. From that blow Tirpitz never again recovered. The remaining five years up to the outbreak of the War were consumed in an even more desperate sense of rearguard actions in the vain endeavour to secure at least an agreement on the basis of three British to two German capital ships, which, after the defeat of his high-flown hopes, he had come to accept as the indispensable minimum.

While Tirpitz's policy cannot, therefore, be claimed to have been actually the spark which touched off the European powder-barrel in July, 1914, it was certainly one of the major factors and probably the largest individual factor in creating that explosive situation. As the one permanent element in Anglo-German relations it had, over seventeen years, become the central issue around which all the other sources of friction between the two nations had crystallised, until by 1909, it had brought about a state of acute tension which alarmed even the lightheaded Bülow, and, by 1911, had led to the brink of open conflict. If during the next years its pernicious influence made itself somewhat less felt, it was not,

as Tirpitz subsequently claimed, because his "risk-policy" had "begun to work" and had been on the brink of achieving final success, when Bethmann-Hollweg's "bungling" in July, 1914, had presented the British with their "last chance" to destroy the growing naval might of Germany before it became too strong for them, but just the reverse; because it had failed; because British naval policy was slowly but surely increasing its margin of superiority and loosening that strategic immobilisation, the exploitation of which was the inner secret of Tirpitz' policy.

THE STRATEGIC CONTRADICTION IN TIRPITZ'S POLICY.

From whatever angle we approach Tirpitz's policy, it reveals itself as unsound and self-contradictory to the core. It was founded upon a rash and wholly arbitrary preconception—his belief that Anglo-German trade rivalry would lead the British to crush the growing German economic competition. Yet at the same time it proceeded upon the truly naïve assumption that they could be fooled into permitting him to build up over a projected period of no less than two decades (1897–1917), a powerful fleet for the effective protection of that economic competition. And not only for the protection! For that basic political contradiction was still further complicated by the remarkable strategic paradox that the fleet which Tirpitz built up under the cloak of the defensive sophistries of his "risk-policy," while not strong enough effectively to protect the interests which it was meant to shield, was yet strong enough to threaten Great Britain in the very foundations of her existence.

That paradox can only be understood if one realises the peculiar strategic dilemma existing between Great Britain and Germany; a dilemma which Mahan had, as early as 1902, most lucidly exposed in his "considerations governing the disposition of modern navies." "The dilemma of Great Britain," wrote the great American naval thinker, "is that she cannot help commanding the approaches to Germany by the mere possession of the very means essential to her own existence as a state of the first order." In other words, owing to her geographic position athwart all Germany's communications with the oversea world, Britain's naval supremacy in home waters, without which she could not maintain her independence for a single day, enabled her automatically to dominate German interests, as far as these, to an ever increasing degree, were dependent upon free access to the overseas world. What made this interlacement of vital strategic interests so particularly galling for the weaker of the two powers was that none of the other great powers was similarly affected; the United States and Japan being each predominent in their respective home waters, while Russia and to some extent France, which lay equally under the strategic shadow of British naval supremacy in the narrow seas, were not to anything like the same extent dependent upon their oversea trade.

But if this undoubtedly constituted a difficult situation for Germany, it left her with a clear-cut alternative; either to build a bigger fleet than Britain and challenge that power to a life and death struggle, or else to acquiesce once and for all in the British strangle-hold—in war—over German oversea communications and restrict herself to her position on the continent. It was the fundamental strategic contradiction in Tirpitz's policy that in trying to wriggle through between these two inexorable alternatives he set himself into diametric contradiction not only to this situation, but

to all the principles of naval warfare and to the eminently sound opinions which he had originally held on that matter.

In his famous Service Memorandum No. 9, in which, about 1894, he first set out his fundamental political and strategic ideas, he had been most clear in emphasising the peculiar characteristics of war at sea in contrast to war on land; that it was directed towards the struggle for the "command," that therefore it could be successfully waged only by a strategic offensive, for which he demanded a numerical superiority of at least one-third over the prospective opponent, and that if such offensive action was impossible, an inferior fleet condemned to a strategic defensive would find itself in a well-nigh hopeless position.

All this he had to give up when, three years later, he turned from his original offensive plans against the Franco-Russian combination to his great campaign against Britain. By no stretch of imagination could he have conceived building up a fleet big enough to defend Germany's oversea

communications in the only effective manner, namely, by wresting command of the narrow seas from the British. We have seen above the ingenious expedient by which he tried, nevertheless, to find a way of securing Germany's oversea communications against the grip of the Royal Navy: to impose by the building up of the German Fleet such a financial and strategic strain upon the British that, as he confidently believed, they would sooner or later be forced to come to terms with him.

What is remarkable in this sheeme was not so much the boundless belief in his own cunning which deluded Tirpitz into seriously believing that he would be able to force the British, of all peoples, by such pressure to consent to restrict their naval supremacy upon which their very existence depended, but that he should have completely failed to have realised the alternative that, if this most highly hazardous scheme did not succeed in dissuading them from war, the result would be to place the powerful fleet, which he had built up at such pains, into that very position of helpless inferiority which he had so emphatically condemned in his Service Memorandum No. 9.

What makes this point the supreme mystery in the tortuous labyrinth of Tirpitz's schemes is that he does not seem to have simply decided to take that gamble with open eyes, in full consciousness of the disastrous consequences in case it should miscarry; but that to all appearances he remained blissfully and utterly unconscious of the fact that there had been any such radical break between his original offensive conceptions of naval warfare against France and Russia and his subsequent defensive plans for the conduct of a war against Britain. The result was that, in contrast to his political line which is consistent and clear once one has grasped its real purpose, his strategical concepts, both before and during the World War, are utterly confused and hopelessly out of focus. confusion reached its unsurpassable climax when after the defeat Tirpitz, in 1926, solemnly published his Service Memorandum No. 9, calling for a superior fleet and the strategic offensive with the claim that it had formed the strategic foundation for his "risk theory" with its acceptance of a hopeless numerical inferiority and its one-sided emphasis on the defensive.

This utter confusion in Tirpitz's own strategic ideas became, however, all the more fatal to the German Navy, because in his domineering temperament he saw to it that no other influence should interfere with his own. At his instigation, the Kaiser broke up the High Command. The Admiral Staff, which on that occasion was made an independent institution,

was kept, owing to Tirpitz's influence, an ansemic body, devoted to purely academic studies, without any contact with, or influence upon, the fleet The older naval writers, like Valois and Maltzahn, who did not fall in with his views, were systematically suppressed. Only Tirpitz's ideas were meant to reign in the German Navy, and as Tirpitz had no idea of divulging the mysteries of his triple-bottomed policy even to his own service and, in the words of his most well-informed interpreter. concealed his innermost hopes and aspirations carefully even from his closest associates, that meant that the German Navy was for all practical purposes seriously reared on the strategic absurdities of his "risk theory." The effects were such that, by 1911, even Tirpitz seems to have felt that something was wrong; for in that year we find him in co-operation with his friend Heeringen, then Head of the Admiral Staff, urging upon Hollweg the shifting of the fleet Law to the new strategic basis of a "fair defensive chance," with express reference to the damaging effects of the "risk theory" upon the outlook of the Fleet. This fleeting insight into the fatal effects of his fictions does not appear to have gone very deep. For not only was the new formula just as fallacious strategically as the one which it was meant to replace, but, when the project fell through with so many other aspects of Tirpitz's plans at that time, he made apparently no effort to pursue the matter. The German Fleet, therefore, continued to be fed upon this admittedly damaging doctrine and to concentrate all its energies upon the tactical preparations for that great decisive battle which in the course of the years had tended to become more and more the sole goal of its outlook and endeavours.

THE WORLD WAR.

This comprehensive, and yet extremely simplified analysis of the bewildering labyrinth of Tirpitz's ideas is unfortunately unavoidable. For without it, it would be impossible to understand the full extent of the almost unbelieveable confusion into which he had, partly deliberately and partly unconsciously, scrambled the very simple and clear strategic issues, which have tried to expose; nor to realise why, despite all the desperate and highly intelligent efforts made to extricate German naval thought from their toils, they have continued to confuse its course down to the present conflict. Above all, it would be impossible to understand the feeling of utter helplessness with which the German naval commanders found themselves, on the outbreak of the First World War, confronted with a situation which in every respect ran directly counter to all they had been taught and had prepared for during the preceding 17 years.

We have said above that the basic factor of that helplessness lay in the numerical inferiority of the German High Sea Fleet, which Tirpitz had succeeded in completely obscuring by the strategic cant of his "risk theory" (or "fair defensive chance"). That strategic helplessness of a decisively inferior fleet, which is the outstanding characteristic of War at sea and distinguishes it most sharply from war on land, the German High Sea Fleet of 1914 shared with the French Fleets of the 18th century and of the Napoleonic Wars. But with the fundamental difference that the French admirals, a solitary genius like Suffren excepted, completely failed to understand the pivotal rôle of the struggle for the "command," hence never realised their plight clearly and were perfectly satisfied with seeking to carry out those secondary tasks, the maintenance of communications with the French colonies oversea, the defence or conquest of such oversea

colonies, the protection or attack of convoys, which their erroneous doctrine expressly held out as wholly preferable to the "empty glory of battles"; the more so as even their very limited measure of success in carrying them out was sufficient effectively to conceal from them the fundamental unsoundness of that strategy.

What made the case of the German admirals in the First World War so incomparably worse than their French fore-runners in the great wars between Britain and France was, first, the fact that the High Sea Fleet had been built and trained expressly, and in fact even exclusively, not for the pursuit of such secondary objectives as might at least serve to keep up the spirits of an inferior navy if it could not hope to dispute its opponent's "command of the sea," but for a decisive struggle with the Not indeed for a strategic struggle for the "command" that idea had, under the confusing influence of Tirpitz's defensive doctrines, evaporated into the mist of an empty lip-service—but for a decisive defensive battle in the Heligoland Bay. There, in the neighbourhood of its bases, on its own chosen training-ground, the German naval command hoped, by bringing into play all special factors which it could possibly mobilise—mine fields, torpedo boat mass attacks, obsolete vessels down to the old coastal defence ships of the Siegfried Class, even the guns of Heligoland—first to whittle down the "brutal superiority" of the Grand Fleet, and then to meet it on something like equal terms. Into what lay beyond that defensive battle and how it related to the general strategic situation, nobody had ever really inquired.

When, therefore, the British Admiralty decided to abandon the policy of close blockade of the German North Sea Coast, upon which the German Admirals counted so confidently, and preferred to impose its control upon the High Sea Fleet from the distant base of Scapa Flow, it threw that force into a psychological confusion, which it certainly did not realise at that time, and which even to-day, after all that has come to light about it, is perhaps not yet fully appreciated in Britain. For it was not merely the case of a stronger fleet dominating the weaker. If that had been all; if the Grand Fleet had sallied forth and with the superior strength defeated the High Sea Fleet despite everything that it had tried to bring into play, the German Admirals would have understood that. And even more, they might well have been led by this experience to lay their fingers upon the innermost strategic contradiction of Tirpitz's naval policy, the building up of an inferior battle fleet, and with Mahan, to realise "the fundamental principle of all naval war, that defence is insured only by offence," that is, by imposing one's control over the enemy with a superior force.

What completely baffled them, secondly, was the unique combination on the British side of pronounced numerical superiority with that peculiar geographic configuration, noted by Mahan in 1902, which enabled the Grand Fleet to strangle German oversea communications from its distant base in Scapa Flow without having first to sally forth into the Heligoland Bay and defeat the High Sea Fleet in pitched battle. For that most peculiar combination, coupled with their own no less peculiar training and indoctrination, involved them into a series of strategic paradoxes from which the successive directors of German naval strategy on the First World War and the commanders of the High Sea Fleet strove in vain for five long years to extricate themselves; and which German naval thought has not succeeded in unravelling down to this day.

When the Grand Fleet, contrary to all that the German commanders had expected, hoped and prepared themselves for, was able, thanks to its superior position, to impose for all practical purposes its control upon them without having first to come forth and attack them on their chosen battlefield, the natural reaction on their part was to sally forth in their turn and seek to bring it to that battle that had been the end and all of their thoughts and training. But to their intense and ever-increasing consternation they found themselves unable even seriously to attempt Not only because the limited radius of their battleships, and above all, their destroyer squadrons, built for a battle within a radius of 100 miles around Heligoland, made it even physically impossible for them to seek out their elusive opponent in his distant lair. But because in addition the Grand Fleet's pronounced numerical superiority made it out of question—as the operative directive of the German Naval High Command clearly and expressly recognised—for the High Sea Fleet to affront it with even a remote prospect of success anywhere in the open sea (the Freiwasserschlacht of the German naval memoranda) where all those special factors which it had been preparing in the Heligoland Bay to offset its numerical inferiority would be partly or wholly absent. Thus from the outset the sorties of the High Sea Fleet which the German Admirals began to initiate, and gradually to expand, suffered from the hopeless inner contradiction of seeking to bring their opponent to battle, yet having to dread nothing more than to run into his whole force; with the result that, between the devil and the deep sea, they found themselves reduced to the desperate expedient of having to seek somehow, by bombardments of British East Coast towns, or by feints against the trade route running through the Skagerrak, to lure part of his forces into a trap.

That strategy collapsed in the battle of Jutland, when Scheer found himself suddenly in the very predicament which it had been his utmost endeavour to avoid and from which only his cool leadership, together with the excellent tactical training of the High Sea Fleet, permitted him to extricate himself without a catastrophe. In his report to the Kaiser, Admiral Scheer emphasised most clearly the impossibility of the High Sea Fleet doing anything decisive to improve that hopeless situation, and in consequence the necessity of concentrating henceforth the entire war effort of the German Navy upon the utmost, and unrestricted, exploitation of the wholly novel weapon and strategy with which the unexpected successes and achievements of the submarine had presented it at the last minute.

Yet recognition of the impossibility of resolving that dilemma was not tantamount to the recognition of its causes. To the end of that struggle the profound contradiction between the German Navy's exclusive training for battle and its inability to bring its opponent to action under the only conditions under which it could risk confronting him with a fair chance of success; between the urgent necessity of doing anything to break the deadly stranglehold of his far distant blockade and the even more urgent need to preserve the High Sea Fleet intact for the vital protection of the German northern flanks in the North Sea and the Baltic; between the strength and proud self-confidence of that mighty fleet and the almost senseless rôle which it was forced to play in the "strategically empty" North Sea, did not cease deeply to perturb the minds of the German commanders.

TIRPITZ'S SECOND PROPAGANDA CAMPAIGN.

So deep had been the haunting uneasiness of that self-contradiction that it might well have led the officers of the German Navy to penetrate to its roots and realise the manner in which they had been misled and sacrificed by Tirpitz's great gamble, if they had been permitted to study that story undisturbed. But once again that arch-intriguer interfered. Undaunted by the complete refutation of his entire policies, political and military, by the outbreak as well as by the course of the War, he was promptly back again immediately after the collapse, to meet the impending criticisms head-on and uphold his actions, in the teeth of events and evidence, to the last inch. His skill in the manipulation of documents and formulas had always been uncanny; but in this, his second great propaganda campaign, from the publication of his memoirs immediately after the collapse in 1919, to his death in 1930—which in contrast to his activities as Secretary of the Navy has received wholly inadequate attention. particularly outside Germany—he surpassed himself; not so much in his memoirs which played so false and loose with the facts that within a few years he had tacitly to disavow them, as by the masterly "publication" of his "Documents" in three sections—1924, 1925, 1926. When he realised that no plea of patriotic interest would prevent the German Government from making public the materials on the Anglo-German naval rivalry preserved in the archives of the Wilhemstrasse, with characteristic resourcefulness he decided to counteract it, as far as possible, by at least getting his own version in first. Those papers, as we have endeavoured to show above, formed from the outset a most curious and equivocal material. Nearly all of them serve beyond their professed intention one, frequently two or even more, skilfully concealed purposes, which only a systematic and exhaustive analysis can ever hope to bring to light again, at least in part. But Tirpitz, by a few deft touches, by skilfully disarranging the sequences and breaking up the inner connections between the individual documents; by leaving out just one or two allenlightening pieces; by scattering others over different publications; by a remanipulation of emphasis with the help of a running acid commentary and the simultaneous use of no less than six different forms of type; last, but not least, by boldly risking the most patent contradictions in the justified confidence that his critics would fail to spot them; was able not only completely to confuse the real significance of his political and military schemes, but even to substitute for them a seemingly convincing picture and to create a wholly deceiving impression of having frankly placed all his cards on the table.

In this, his second great campaign of propaganda, Tirpitz, retired since the spring of 1916, no longer could officially command the resources and institutions of the German Admiralty. But the unofficial support and encouragement of every conceiveable nature, which he received from the new German Navy in this work of wholesale mystification, was hardly less wholehearted or enthusiastic. In part this was simply the result of the fact that its leaders belonged to his closest former adherents; in particular Admiral von Trotha, who steered the new "provisional navy" of the Weimar Republic through its first stormy days. But quite apart from the personal factors which, because they are mostly so intangible, it would be highly unwise to disregard either then or later, the objective exigencies of the situation in which the new German Navy

found itself placed after the debacle would alone have forced it to endorse and propagate the legend so skilfully woven by the "father of lies," whether it liked him or not. For the defeat had left it—unlike the Reichswehr, which, under the brilliant leadership of Seeckt, succeeded in regaining under the Republic a position in the state far transcending that which it had ever held under the monarchy—after the loss of the German colonies and world power, without even the ideological bases for its existence, far less with any demonstrable necessary function. To permit in these circumstances the development of any doubts as to the correctness of Tirpitz's original policy would have meant a fortiori a fatal weakening if not the destruction of its own incomparably more precarious position.

Thus the whole official and even more unofficial weight of the new German Navy was thrown behind Tirpitz's campaign. The official History, which had been taken in hand immediately under von Trotha, was nothing but a continuous echo of and apology for his views, in particular the central series of volumes on the struggle between the two main fleets from the able pen of Otto Groos. From the official History downward, the "accepted version" trickled down through popular accounts, personal reminiscences, the articles and reviews of retired naval officers in the daily press, until it had percolated the entire German concept of that struggle and against their will influenced the minds even of his most embittered and lynx-eyed critics.

To complete the soporific influence of that campaign, pursued with systematic and untiring energy, the startling successes of which became apparent on such occasions as the halting and pointless criticisms put forward at the time of his decease, a highly unofficial, yet no less effective system of terror wielded in the first place by some of Tirpitz's closest adherents, served to suppress by calumny, or by ridicule, or—if nothing else would serve—by a most effectively organised conspiracy of silence to render innocuous, anybody who had been rash enough to express views denoting a deviation from the official line or to begin to expose, in however moderate and respectful a manner, its glaring contradictions. The invariable result of this system of terror, the effectiveness of which can only be appreciated by those who have had opportunity of watching it from behind the scenes, was the general monotony and stagnation in the intellectual development of the new German Navy, during the first eight years (1918-1926) contrasting most strikingly with the brilliant intellectual revival, the untrammelled freedom, even if at times overrash criticism which the Reichswehr was experiencing at the same time under the intensely stimulating leadership of Seeckt.*

WEGENER.

This stagnant atmosphere was suddenly, in 1926, set into violent commotion by a startling memorandum from the pen of Vice-Admiral

* The limited scope of this study unfortunately prevents us from pursuing this enquiry into a most pertinent and most highly important issue: the manner namely, in which the propaganda methods evolved by Tirpitz and the young men of his Nachrichtenburo have served as a basis for the Nazi leaders in their much more ambitious but hardly more brilliant endeavours. Although this debt has even been officially recognized by the Nazi leaders in one or two places, the underground current which leads from Tirpitz's methods to Hitler's and from his Nachrichtenburo, which during the First World War furnished the nucleus of trained personel for official German propaganda, to Goebbels's ministry, have rarely been recognized and never adequately traced and exposed.





U.S.S. Franklin on fire after bomb hit. (17.8. official Navy photograph.)

U.S.S. Franklin, disabled by Japanese bombs, returning to New York Navy Yard for repair.

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Wolfgang Wegener (retd.). Already, during the World War, Wegener had made himself known in the staffs of the German Navy by his passionate advocacy of solving the German High Sea Fleet's dilemma by the occupation of Denmark. This, he argued, would give Germany not only full control over the economic resources of that country, above all, it would enable the High Sea Fleet at last to menace a trade route of some importance to the British, the Scandinavian trade route through the Kattegat and Skagerrak. Thus it would force the British Naval Command either to attack them there under adverse circumstances, or accept loss of that trade route and, even more, the concurrent loss of prestige with the Scandinavian powers.

After the defeat, the continued pursuit of these ideas had gradually led him to the conclusion that the material and even more psychological helplessness of the High Sea Fleet during the World War had not been, as Tirpitz and the Official History endeavoured to prove, merely the accidental result of the personal inadequacies and conflicts between the responsible leaders. Something fundamental had been wrong in the German Navy's outlook. In seeking obstinately for four long years a purely tactical decision against the Grand Fleet, the German Naval commanders had completely lost sight of the strategic situation, and hence of the true significance and purpose of naval warfare. The fact, namely, that the raison d'être of a fleet did not consist in running "strategically senseless" victories over the enemy's armed forces, but in the struggle for the control of the vital trade routes and the maintenance of its country's oversea communications. Thus, in staring as if hypnotised at the "strategically empty" North Sea, the German naval commanders had completely overlooked that the solution for all their perplexities lay under their very noses. The occupation first of Denmark, then, from there, of southern Norway, bringing the High Sea Fleet within striking distance of the British blockade and of its pivotal base at Scapa Flow, would have assured to it that battle under favourable conditions, which it had been seeking in vain in the North Sea. Above all, whatever the outcome, it would at least have directed its effort towards its true and primary mission, the breaking of the British strangle-hold and the opening up of the "door to the Atlantic" for German oversea communications.

The quest for the hidden causes of such strange blindness led Wegener backwards to Tirpitz's "risk theory," the diplomatic cant of which he accused of having—for the sake of self-contradictory and inachieveable political objectives—crippled the German Navy's strategic insight and imparted to it a subconscious defensive outlook, to which its pronounced tactical offensive "will to battle" had been but the instructive compensatory reaction. Steeped in the German tradition of land warfare and its fundamentally different conditions, the German navy had failed both to detect the obvious strategic fallacies of that doctrine and its own total atrophy of strategic purpose; and thus had remained, intellectually, a mere coast defence force.

It is easy to understand the force with which these bold contentions, couched in monumental, gripping, if somewhat repetitive, language, hit the German Navy. After four years of hopeless perplexities during the War, eight further years of repression and bitter disputes as to the causes of the defeat, it was as if somebody had torn open a window in a sick-room and let in a fresh Atlantic breeze. Wegener's basic criticism, the failure of the German commanders to understand the strategic situa-

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tion confronting them, hit the nail on the head. His shrewd attacks upon the pernicious influence of the "risk theory" and of the familiar conceptions of land warfare, as responsible for that failure, came so near to the truth that only by the most comprehensive knowledge of the facts and elaborate analysis of his arguments could it be realised where they missed it by inches. His shifting of the discussion from the question where, when, how, the High Sea Fleet might have brought the Grand Fleet to battle, to the decisive issue of the maintenance of the German transatlantic lines of communications had the effect of an absolute revela-The more so, as Wegener, while thus at long last laying his finger upon that critical issue of Anglo-German naval relations, which Mahan had seen so clearly—and which Tirpitz had tried to evade with such disastrous consequences—succeeded at the same time in evading it again, although in a much more subtle manner than Tirpitz. By recognising in principle all three factors which had made up the strange compound of the German Navy's plight in the World War-numerical inferiority; inferior strategic position and lack of strategic insight and will—but in concentrating his discussion one-sidedly upon the second and third of them alone, Wegener concealed, from himself no less than from his readers, that the basic reason for Germany's failure to maintain her transatlantic communications "against Britain" had been her inability to provide the vastly superior naval force needed for this, and only to a secondary degree to her inferior position and lack of strategic understanding.

Thus, with all his penetrating criticism, he missed the basic fallacy in Tirpitz's dream of a great German Sea and World Power "against Britain," and in consequence was able in the same breath to castigate the errors in its execution and yet emphatically re-affirm that aim itself; and, what was more, was able to imbue his readers with the impression that that bid had failed not because of its inherent impossibility, but because of avoidable errors in its execution. To the new German navy his small study became something in the nature of a gospel; relieving it from fruitless searching into what had passed, giving it a task for the present, a goal for the future and, above all, a strangely messianic hope. As with the prophets of old, recognition and condemnation of the errors of the past seemed to hold, not only the hope, but almost the certainty of

a glorious resurrection.

Thus the result of Wegener's courageous attempt to lead the German Navy out of the maze in which Tirpitz had left it was in the end merely to plunge it into another confusion, nearer to the truth, more subtle, and hence in a way even more dangerous. Because he too, in his turn, shut his eyes to the unpleasant fact that Germany could never hope to secure "command" in the narrow seas against the superior sea power of Great Britain, his claim that the German navy's true mission lay in the Atlantic in the securing of Germany's vital transatlantic lines of communication— "against Britain" as he expressly re-emphasised in the political conclusions, not made public until the second edition of 1941—remained in practice an empty postulate, a hollow mockery, nay, worse, a delusive will-o-wisp. For although the leaders of the Germany Navy naturally could not disregard that hard fact as conveniently in reality as he could on paper, his shadowy, equivocal and even contradictory conception of the "command" itself served not only most effectively to conceal the full extent of that contradiction; but above all, to provide the starting point from which the German Navy, between 1926 and 1939, succeeded by a series of highly ingenious, almost imperceptible, steps to emasculate that most inconvenient postulate to such an extent that by the outbreak of the present conflict they had ended in reducing it into the very opposite of what it was meant to stand for, while still all the time continuing to pay lip-service to its letter.

The point which Wegener, with all his emphasis upon the decisive rôle of the struggle for the command, had completely missed—partly because, like all German naval writers, he had never taken the trouble really to analyse it, and partly because of his disregard of the factor of relative strength in favour of one-sided emphasis on the geographical factor-was the exclusive character of the "command." The fact that "command" can be established only by control of the opponent's main forces, not by any local and temporary control over a geographic area, trade-route or line of communication, into which the enemy can break in at any moment with, at least locally, superior forces. That, therefore, either "command" is thus established by one of the belligerents over the other, one-sidedly and exclusively, or else that there is no "command." Wegener, on the contrary, by his very emphasis upon the struggle for the "command" unconsciously tended to substitute that two-sided struggle for the one-sided and exclusive "command" itself, going, in one passage at least, as far as to describe explicitly the struggle for the "command" as its exercise ("Seeherschaft treiben"). By this shift from the "command" to the struggle for it, and again from "command" over an opponent to "command" over a geographic area or trade route, Wegener was led to regard "command" as something that could be localised, and hence divided, until he finally arrived at that most dangerous and misleading identification of "command" with the "control of seacommunications." The bulk of his references to the "command" remained indeed a clear and unambiguous, if somewhat abstract and shadowy, insistence upon the paramount necessity of acquiring " command " for oneself. But through this process of almost imperceptible subtle shifts, that concept had been so "softened up" that it became possible for his adherents in the course of the ensuing decade to identify his identification of "command" with the "control of the vital sea communications" as the true purpose of naval warfare, in their turn first with a state of affairs in which neither side sought any longer for the "command" -both restricting themselves to the mutual attack and defence of their convoys—as the French admirals in the 18th century had sought to conduct naval war-and finally with "economic warfare," pure and simple; that is with the explicit or implicit acceptance of the enemy's "command" and the attempt to undermine it by a "trade"—or "tonnage warfare" waged with the help of the submarine and the surface raider.

ASSMANN.

The man who completed that process started by Wegener was Assmann. It would be difficult to imagine two more different personalities. The predominant impression which one gains from Wegener's writings is that of a boisterous vitality and self-confidence brusquely brushing aside any facts not inclined to fit into his scheme of ideas. The predominant impression with Assmann is, on the contrary, that of a conscientious scholar, forever torn between his profound reverence for the established authorities, in particular his profound reverence for the Tirpitz and his legend,

and the distressing realisation that the documents, which it was his duty as head of the German Navy's archives and historical service to collect and interpret, so frequently ran directly counter to it. That conflict between his innate sense of loyalty and his very obvious profound regard for the truth, as well as his vain endeavours to reconcile the irreconcilable, make his earlier writings, above all his three great studies on Tirpitz's policy and the German Navy's Strategy in the First World War (Militärwissenschaftliche Rundschau 1939, No. 2, 3, 4), a kind of perpetual jigsaw from which it is well nigh impossible to ascertain clearly the ultimate drift of his own ideas. Distressing as this inner conflict, which we can grasp so to speak almost in action, is for the analysis, it is at the same time most highly illuminating. For it reveals, better than any other document of present day German naval thought, the roots out of which, in the years immediately preceding this conflict, grew that "new conception of naval warfare" that was to animate German naval policy and strategy before and during the first half of this war; and which Assmann himself, by a tragic irony of fate, was finally to codify in his "Wandlungen," a few weeks before its spectacular break down in November, 1942.

Like Wegener, Assmann realised that the German Navy's perplexity in the First World War was rooted in Tirpitz's preceding policy and strategy. But, as head of that force's historical service he also knew that that policy had been far more complex than Wegener with his sweeping iconoclastic zeal had ever realised. Not only that alone among all German naval historians and critics he followed it right back to Service Memorandum No. 9, but, what was even more remarkable, he actually realised and conceded that the offensive strategy with a superior fleet envisaged by Tirpitz in that document was in fundamental and inconcilable contradiction with the hopeless numerical inferiority in which the fleet, built up by him on the ideological basis of the "risk theory," had found itself in August, 1914. So much so that he found himself compelled to reject emphatically all the fantastic claims put forward after the defeat by Tirpitz himself and his adherents as to the glorious opportunities which the High Sea Fleet allegedly had missed during the first months, and to assert most bluntly that the High Sea Fleet's "chances" at that time consisted merely in the fact that its prospects continued still further to deteriorate as that conflict drew on. For that same reason, Wegener's parallel attempt to brush aside the basic factor of the German High Sea Fleet's numerical inferiority airily with his ingenious suggestion of a move northwards into Denmark and Norway, did not apparently convince him; although he conceded that it would undoubtedly have improved its position.

Thus, after Tirpitz and Wegener, it was now Assmann's turn to face that inexorable sphinx, which we have tried to designate briefly as the "Anglo-German naval dilemma," and to try to solve its riddle. But, although in his approach he had shown a far keener perception of the decisive issue of basic strength than either of them, he too in his turn, at the last moment preferred to swerve aside, and to seek an outlet by yet a third and even more remarkable evasion. Just as Wegener, Assmann too recognised, in principle, all three elements in the German navy's hopeless plight during the First World War: numerical inferiority, inferior strategic position, lack of strategic insight. But, whereas Wegener's solution had been to stress one-sidedly the second of these three factors, Assmann's consisted in stressing the third, the intellectual perplexity. Psycho-

logically, this was only too understandable in a man, who more than anyone else was familiar with the official as well as private corresponding of the leading German naval commanders, and with the perplexity reflected That perplexity, he too was inclined to attribute in part, though to a less absolute degree than Wegener, to the cramping effect of the defensive ideology of Tirpitz's "risk-theory"; but beyond that, and primarily, to the fact that the British countermoves, both political and strategic, had taken Tirpitz and the other German naval strategists completely by surprise. In this manner he was able to reconcile to his own satisfaction his inner conflict and explain away the two inconvenient factors, which he could not deny: the hopeless numerical inferiority of the German High Sea Fleet of 1914—by claiming that Tirpitz's "risk theory" had envisaged at the worst a straight naval duel with Britain, not a fight against practically all major sea powers of the world combined -the factor of its having been caught in a hopeless strategic situation by presenting the shift in British naval strategy from the close blockade upon which Tirpitz had based all his plans to the distant blockade at Scapa Flow, as an utterly unforeseeable radical change in the entire

purpose and methods of naval warfare.

While thus able to reconcile his acute consciousness of these two factors with his undiminished reverence for Tirpitz, Assmann involved himself unconsciously in a whole sequence of subtle misunderstandings leading him in the end to otherwise inconceivable conclusions. By emphasising the surprise element in the British change in 1914 from their previous system of close- to long-distance blockade, he expressly denied the organic continuity between the traditional British system of naval strategy forged in the course of centuries and this new development from it, and thus was led to exaggerate what had only been a change of method into a radical change of purpose. For failing to realise clearly the pivotal rôle of that long-distance blockade within the British system of "command" in all its manifold aspects—both as the basis of the defence of British and Allied sea-communications, as well as of offensive military actions all over the world and of economic blockade—he seized onesidedly upon that last aspect alone, and thus he was led to see in it a new British system of naval war as economic warfare which he thus opposed to a, wholly fictitious, former system of naval warfare characterised predominantly by military action. The result of this fundamental misreading, first of the evolution of naval warfare and second of the organic unity of the basic factor of the "command," was thus that Assmann substituted for Wegener's opposition between: "naval strategy based upon battle-as-such" and "naval strategy (correctly) based upon the struggle for the command" his own opposition of "military naval war-(prior to 1914) and its allegedly new conception as "economic according to him, introduced by the British with their turning to the "long-distance strangulation blockade" of 1914, and further confirmed in his eyes, first by the decisive effect of that measure, second by the continuously increasing significance of the economic factor in modern total warfare.

While there was thus just enough truth in that deduction to make it appear plausible and even superficially convincing, it led Assmann, in practice, to the renunciation of all that which Wegener had just been striving to hammer into the German Navy. For by identifying his new abstraction of "naval war as economic warfare" with "trade-warfare"

and finally with mere "tonnage-warfare" he arrived at the point where he substituted for the struggle for the control of sea communications through the establishment of one's own command, the acceptance of the enemy's "command" and even the avoidance, as far as possible, of any engagement with his armed forces in favour of the exclusive concentration upon the sinking of his merchant shipping as the most direct and most consequent application of that "new conception of naval war as economic warfare." Thus, with him, the pendulum of German naval thought, started by Tirpitz, had swung through its whole are; from the extreme purely military conception of naval warfare as the struggle for a decisive battle, with Tirpitz and the German commanders in 1914–18; through Wegener's intermediate, but as we have tried to show, inadequately classified emphasis upon the correct objective of the struggle for the "command," to Assmann's opposite extreme of one-sidedly "economic warfare."

And yet so subtle had been the steps by which that latter evolution had taken place that as far, at any rate, as we can judge from the documents, neither Wegener nor Assmann—nor for that matter anybody else in the German navy-appear to have realised that while using almost the same terms—for Assmann with all his emphasis upon "economic warfare" by no means dropped the concept of the "command"—they were standing in reality for diametrically opposed strategies. In fact, Assmann was even able to take up, as we have seen in our opening passage, Wegener's messianic message—although with a profoundly changed content. For by emphasising as he did the surprise effect of the alleged British turn in 1914, to the new economic naval warfare, he was led quite unconsciously to the gratifying conclusion that, by the shock of that radical innovation, the German Navy had been driven to analyse its causes down to their deepest roots; that it had developed its implications systematically to their extreme conclusions and thus had been able to understand its significance even better than its originators. So that, as we have quoted above, he could end his study with the undoubtedly genuine conviction: "We will win this World War, because we lost the First."

GERMAN NAVAL POLICY.

These ideas, developed by Assmann in his Wandlungen, constitute the common denominator of German naval thought between, roughly, 1936 and 1942; not in the mechanical sense that they represent a blindly-accepted doctrine from which no divergences were tolerated, but in the broader sense of a medium line around which contemporary German naval thought oscillates in endless variations and permutations.

Despite this variability on the surface, the consensus of opinion on the main issues over the entire range of German naval writing is so striking as inevitably to raise the question whether this is but a fable convenue—as was, for instance, certainly the case with the emphatic protestations between 1935 and 1938 that Anglo-German Naval Agreement had eliminated even the idea of a possible conflict between the two nations—and whether in that case Assmann's own contribution to it, as the Head of the German Navy's Historical Service, has been anything more than that of providing this pre-arranged fable with the necessary systematic and historical rationalisation. As seductive as this tempting hypothesis may appear at first sight, internal evidence seems to us to point the other

With all deduction of the elements of propaganda which are undeniably discernible in Assmann's studies it seems to us that they contain a solid core of genuinely held views—which may not be held any less genuinely, because they happen to coincide with some eminently fruitful propaganda line. To take the basic quotation form which our investigation started, Assmann's emphasis upon the contrast between the errors of German strategy in the last conflict and its superior wisdom in the present coincided without any doubt with one of the main lines of German propagranda in the military and the political as well as in the naval field. the close analysis of Assmann's arguments leaves one with the strongest impression that, however devious the routes by which he reconciled the conflicting elements of his thought, and however curious the results to which they led him, he did genuinely believe in them, and by virtue of his office was able to convert the leaders of the German Navy to them. That impression is strengthened to a definite conviction, when we further observe how these results, very far from representing a mere rationalisation of what the objective situation of the German Navy would have counselled, have tended again and again to divert its strategy from the most reasonable and hopeful course, precisely under the fatal influence of that "new conception" of naval warfare in which Assmann and, with him the German Navy, believed they had found the key to victory.

Following this line of thought, the first, the foremost, the most striking discovery about the influence of German naval thought, of which we have tried to retrace the main stages above, upon the German Navy's course both before and during the present conflict is that the German Navy had a policy. That it did not live, as has so frequently been alleged, from hand to mouth, shifting its ideas and objectives from one of the Führer's kaleidoscopic political volte faces to the other; but that underneath all these manœuvres on the surface there ran, once again, as it had been with Tirpitz, the steady undercurrent of a consistent policy as amazingly farseeing in its long-range perspective as short-sighted in its failure to realise

its most patent errors.

The second startling discovery, closely linked up with this first one, is the fact that this long-range policy of the German Navy did not imply, as the Anglo-German naval agreement of 1935 expressly protested, a break with, a renunciation of the political objectives aimed at by Tirpitz; but, on the contrary, their resumption, with the modifications made necessary by the realisation of the errors in this policy and strategy. In that respect the passage in Wegener's memorandum of 1926, suppressed in its first publication of 1929, but restored in the second of 1941, is most highly illuminating. For in this, the political implementation of his critical analysis, Wegener with his characteristic bluntness pointed out that although the foremost necessity of the German reconstruction would have to be the re-establishment of the "continental basis," the German Navy would have to see to it that the real objective, the re-establishment of Germany as a World and Sea Power, must not be obscured thereby. With the resumption of that objective, Germany would, therefore, certainly find Britain again her natural opponent bent upon stifling her in her weakness, and thus would see herself forced to seek her development to full stature "against Britain," and after that "against the transatlantic world of the United States." So convinced was he of that necessity that he went even so far as to indicate in outline the steps that would have to be taken in order to conduct that new struggle with better prospect of success: the need for the use of the French Atlantic ports, which at that time, in 1926, he could not imagine Germany would ever be able to acquire by force of arms, and which in consequence he envisaged securing by

diplomatic means, possibly an alliance with France.

These long-range political and naval perspectives put forward by Wegener in 1926 formed the dominant influence upon the inner course of German naval policy; certainly so from 1933 onwards, when Adolf Hitler. who until his accession to the leadership of the Third Reich had taken little interest in naval affairs, was so struck by them that Wegener became a kind of unofficial confidential adviser; his memorandum became known in German naval circles as "Hitler's naval bible." Yet. to an even higher degree than at the time of Tirpitz's great bid for sea power against Britain, their influence and even existence remained almost completely unsuspected by outside observers, because, in contrast to the period between 1897 and 1914, for several years, until Munich, the course both of the Führer's own policy and even more that of the Army, seemed to point, and probably did point, in exactly the opposite direction. Moreover, the very weakness of the new German Navy, both vis-a-vis Great Britain, as well as within the framework of the Wehrmacht, dominated by the Army, to which the third partner, the Luftwaffe, formed little more than an appendix, seemed to reduce it automatically to the rôle of second fiddle and to preclude the possibility of its trying again to conduct a policy of its own, far less of its aspiring to determine, once again, the direction of German policy as a whole. It is well open to doubt whether even the leaders of the German Army ever knew, of if they knew, clearly understood the extent to which the German Navy had taken up again Tirpitz's fatal heritage.

GERMAN NAVAL STRATEGY.

This unsuspected independence and scope of the German Navy's policy was due as we have seen, in the last resort, to its belief in its superior strategic insight, by which it hoped to offset its material weakness and felt confident of forcing a successful issue even against the vastly superior forces of the two Anglo-Saxon powers. It was a strange delusion, and the strangest part about it was that neither Assmann nor any one else seems to have realised that this strategy of "economic" or, further still, of "tonnage warfare," in which they believed to hold the key to victory, was in reality the most uneconomical, the least direct, the least "strategic" of all forms of strategy conceivable. The least "strategic" because it was meant to achieve success not by the utmost concentration of its blows against the key joint, or joints, in their opponents' armour, but by the slow piling up of inumerable separate losses imposed upon his shipping space by the incessant hammering of all forces: commerce raiders. submarines, planes and mines, until eventually his economic power of resistance would succomb under their accumulated weight. understanding was all the more remarkable, because in addition to thus running counter to the natural tendency of strategy towards the utmost concentration of effort, it specifically ran counter to the particular exigencies of the concrete position in which the German Navy found herself. For while it was obvious that she could not possibly hope to acquire for herself the "Command of the Sea," it was by no means equally obvious that in those circumstances her best policy would be to rush straightaway to the opposite extreme. On the contrary! By keeping her few powerful units strictly together and striking with them at the vulnerable points in the Allied system, the great transatlantic convoys, she might at least have disputed the Allied "command" to an extent sufficient to create considerable disturbance and seriously impede its

functioning.

The failure of the German naval strategists to see this most obvious situation was not merely the result of their self-hypnosis with the will-owisp of their new "economic warfare." In twenty years of passionate discussion they had turned round and round, first the merits of Tirpitz's naval policy and German naval strategy during the First World War, later the change from the old "military" type of naval warfare—to the new "economic." But once only in all those years had the most independent spirit amongst them, Admiral Donner, devoted a single brief article to a necessarily inadequate analysis of the British system of "offensive Nobody ever thought of following him, and even so conscientious a scholar as Assmann based his entire theory upon the shift of British naval strategy from the close to the long-range blockade in the First World War in complete ignorance of the most elementary facts about that event. In this respect, therefore, German naval theory had remained behind the much-decried Jeune École, which had had at least the merit of having based its ingenious proposals for the disruption of the British system of blockade, upon a close and accurate study of it.

This amazing failure of German naval strategists to base their attack against the British system of "command" upon a clear, detailed analysis of that system did not take the form of a neglect of the surface warship in favour of the new weapons, the submarine and the plane. On the contrary! The whole of German naval discussion shows that it was this activity of the surface units which held their main interest. Where German naval strategy seems to have gone hopelessly and fatally wrong in this war was apparently not in any lack of emphasis upon the rôle of the surface ships as in the method of their employment; in failing to envisage and use them as an instrument for the dispute and, if possible, disruption of the Allied "Command" and in persisting in relegating them instead to the subordinate function of mere commerce destroyers (Handelsstörer), in which their strength was wasted on nothing higher

than to add their mite to the increasing toll of Allied shipping.

Instead of conserving these precious heavy units for the concentrated attack upon the Allied system itself, German naval strategy persistently squandered them away in isolated packets and upon secondary missions, for which light cruisers or auxiliary cruisers would have done equally well. Thus, at the outset of the war the Panzerschiffe were immediately sent out into the Atlantic, apparently with no other objective than to distract as many Allied cruisers as possible from the narrow seas and thereby facilitate the running of the Allied blockade by German merchantmen caught overseas by the outbreak of the conflict; with the result that the defeat of the Graf Spee off the River Plate cost the German Navy not only that ship, but, what was infinitely more, the nimbus, which up to that time had surrounded the "pocket battleships." Similarly the sending out, first of the Scharnhorst and Gneisenau, and later of the Bismark, upon commerce raiding missions into the Atlantic ended with the prolonged laying up of the first two at Brest and the loss of the latter vessel; all three of which a few months later might have proved invaluable for concentrated attacks upon the Murmansk convoys. Moreover, the moral shock of these disasters was such that, although the German naval High Command eventually did succeed in the following spring in re-concentrating most of its remaining heavy ships in its Norwegian bases, it was no longer willing to risk them, and from that time onwards contented itself with the effect which, by the mere threat of their existence, they exercised in tying down the Home Fleet.

In fact, so obsessed was the German naval high command with its new conception of "commerce warfare" that, in order to pursue it with the utmost consistency, it appears to have imposed upon its raiders strictest injunctions not to engage in any clash with the Allied forces if they could help it. Even the submarines were apparently not permitted to direct their attacks against escorts until the autumn of 1943, when their primary campaign against Allied merchant shipping had signally broke down. While undeniably "in line with" the general direction of German naval strategy to wage this war as pure "commerce warfare," it was nevertheless a psychological blunder of the very first order, the fatal results of which were to prove themselves in such actions as the Battle of the River Plate, the last sortie of the Scharnhorst, and the simultaneous defeat of the German destroyers in the Bay of Biscay.

Nor was this the only, or even the primary, psychological error in the calculations of the German naval high command. For, by adopting this strategy of pure commerce raiding, they were actually accepting, and submitting to, the Allied "Command." That fact, and even less, its psychological implications, may not have been clearly realised by the men who devised and directed that strategy—but to the men who had to wage the struggle within the net of the Allied forces its grim reality was only too plainly evident. Hence that significant tendency, most clearly revealed in the reports of the survivors of the ill-fated Bismark, to swing violently between a state of exuberant elation at the realisation of their dream of waging true oceanic warfare in the open Atlantic, and the painful realisation of being "out of bounds" there.

This failure of the German naval commanders to appreciate and allow for the inevitable psychological handicap of the inferior belligerent at sea, struggling in the toils of its opponents' relentless grip, was complemented on the other side by their failure to understand either the psychological strength or the resilience of the British system. What they totally failed to understand in their abstract calculations was the secret that in the last analysis the "Command of the Sea" is not so much a material fact as a state of mind. That, therefore, not only does it give those who represent it a sovereign feeling of superiority even in the face of hopelessly superior odds—from the Rawalpindi and the Narvik destroyers to the Jervis Bay and that corvette which signalled that she was about to engage the Scharnhorst—but such a system, firmly founded upon an unbroken tradition reaching far back through the centuries, is capable of going on for a long time even when everything appears to conspire to bring about its collapse.

Because of these fundamental psychological errors the German naval commanders tended continuously both to over-estimate the diversionary effects of their attacks as well as to under-estimate the elasticity and recuperative power of the British system. The result was that, blinded by the remarkable ingenuity which they had undeniably displayed in the strategic and technical staging of their submarine and air campaigns against

Allied shipping, they indulged in excesses of wishful thinking all the more fatal in view of their simultaneous under-estimate of the titanic achievement of American industrial mobilisation. Never were those dreams more rosy, that conviction of victory more genuinely certain, than during those days in October, 1942, when Assmann crystallised them in his study, not more than a fortnight before the turning of the tide was to show up their hollow unreality to all the world.

GERMAN MARITIME STRATEGY.

The fatal effects of these fundamental miscalculations of the German naval commanders did not remain confined to their own sphere. contrast to the situation in the First World War when the German Army and Navy had virtually been fighting each its own particular war, in this conflict they, together with the new third partner, the Luftwaffe, have been closely co-ordinated under the supreme directive organ of the Oberkommando der Wehrmacht established in February, 1938. this supreme directing agency their respective influence, while nominally equal. has not been the same. The Army, as the senior as well as obviously the most vital of the three Services, inevitably has dominated the other two; staffing nearly all the key posts, except the Intelligence, and most of the minor jobs with its men. But the Navy, nevertheless, has succeeded in maintaining a measure of independence considerably greater than that of the Luftwaffe, particularly so as in the building up of the new tridimensional doctrine it had been frequently able to negotiate between the widelyopposed views of the Army and Air Force (Otto Gross).

This closest organisational integration of all three Services into a single body, the Wehrmacht, was, however, vitiated by the various internal tensions between their ideas, not less, but even more fatal, because their full extent has probably not fully been realised by anyone of those concerned. The first and foremost of these semi-concealed inner tensions between the Army and the Navy has been the fact, already touched upon above in connection with the divergences in their pre-war policies, that they have been waging the war each against a different enemy; the Army primarily against the menace of a war on two fronts by a Franco-Russian combination, particularly, however, against the latter power, about the tremendous progress of which it had no illusions; the Navy, as we have seen, in the first instance "against Britain," and thereafter

against the combined might of the two Anglo-Saxon sea powers.

In the first stages of the War this fundamental divergence in the appreciation of the "real enemy" and consequently of the entire strategy of the conflict, does not appear, as far as we can see from the material at our disposal, to have given rise to any serious friction. The Polish campaign was obviously an army-air-force show. In the Norwegian campaign the interests of the three services were not absolutely parallel, those of the Army being predominantly defensive, to secure its northern flank, before it started on its great drive in the West, while those of the Navy and Air Force were both defensive and offensive, predominantly, however, the latter. Moreover, the Navy had to bear the brunt of the cost, but as it gained thereby that Norwegian springboard upon which its attention had been rivetted ever since Wegener's Memorandum of 1926, it could not and did not, in fact, grudge the price. In France the Army carried through the first half of its programme, but coincidently

secured thereby for the Navy those ports on the Channel and, even more, the open Atlantic, without which, as we know to-day through Assmann, the naval commanders had notified Adolf Hitler years before the War, they could not hope to carry their war against Britain to a successful conclusion. The defeat in the Battle of Britain is still too much obscured in its strategic background for it to be possible to define the relations of the three services with respect to it; although it seems as if the driving factor had been the Luftwaffe, while the Navy, which had a better estimate of the unbroken strength of British Sea Power, preferred apparently its own chosen process of slow strangulation. The turning away from Britain after that defeat and against Russia, was an obvious setback for the Navy and a triumph for the Continental School, but here again the Navy found a way of integrating that move into its own radically different picture of the War, by stressing the fact that its purpose was to secure Germany's back for the decisive struggle against the two Anglo-Saxon powers, as well as to make Germany finally blockade-proof by the conquest of the Ukraine and the Caucasian oil fields (Assmann) or else by arguing that Germany was finding herself midway between two antagonistic tensions, one continental, against Russia, the other oceanic, against the Transatlantic World (Donner). At the same time the Navy could claim that its war upon Allied tonnage and, even more, against the vital Murmansk convoys, contributed signally to reduce the assistance which the Western Allies could give Russia in her life and death struggle with the German Army.

These ingenious compromises between what remained at the bottom diametrically opposed tendencies—which we find repeated in endless permutations through the whole of German naval literature—served most effectively to conceal from the Wehrmacht that there was actually one line along which these divergent interests of Army and Navy could have been brought to coincide in an almost ideal congruence: in the Near East. If, after the fall of France, Adolph Hitler and his strategic advisers had had the insight of striking with all their overwhelming power and prestige south-eastwards, instead of engaging in the mad gamble of the Battle of Britain, they might have been in the position of checkmating thereby, simultaneously, both the Kremlin on the one hand, and the Empire on the other. That they failed to realise this unique oppotunity and cardinal fact of the maritime strategy of the situation, which was so acutely felt in Britain, was in the last resort due to the fact that the German Navy, whose responsibility these extra continental issues were, had failed as signally in studying the maritime strategy of the Empire as it had failed to analyse the British system of "Command." Add to this the barely concealed German contempt for their Italian partners and we can understand why, during what were perhaps the most critical months of this war, German strategy first completely neglected the vital developments around the eastern rim of the Mediterranean, and, when it finally decided to take a hand in them, saw in them mainly an unpleasant distraction from its real objective, the conquest of Russia. Nor can the relative indifference with which it subsequently followed the ebb and flow of Rommel's campaigns in the crucial North African theatre be attributed to the undeniably tremendous difficulties of supplying even his handful of divisions across the Mediterranean in the teeth of the Mediterranean Fleet and of the Royal Air Force. For again and again in this conflict has the German General Staff demonstrated its ability to overcome seemingly almost insurmountable obstacles, if only the urgency of the

issue has been plainly evident to it.

In the last resort this failure of the German Navy and, with it, of the Wehrmacht as a whole, to realise the crucial significance of the Mediterranean campaign was but the ultimate outcome of its key obsession: the idea of "economic warfare" which was to prove, if possible, even more fatal in the wider maritime field than is that of naval strategy proper. Because the German Navy saw in the expansion of this conflict to hitherto unheard-of global dimensions, nothing but a quantitive expansion of the "economic struggle" up to a global scale, it not only missed the military significance of the struggle for the Near East, but, above all, failed to grasp the greatest, all-embracing issue of the wartime strategy of this War: the question of the struggle between the two coalition groups as a whole. The very separation of the two parts of the Axis should in itself have been the most cogent incitement to them for the concentration of their efforts upon the one task of joining hands across the Indian Ocean and Continent—quite apart from their appreciation of its effects upon the global framework of Allied strategy. But of all the many German naval writers, only one (Otto Groos) appears to have seen something of the crucial importance of that move, and even he only dimly; whereas with the others, and particularly with Assmann, the overall picture of the Axis strategy which we encounter is that of two separate and self-sufficient areas, each seeking to maintain itself in control of its own against the Allied counter attacks; confining their collaboration to an exchange of experiences and economic products, as well as to a mutual, world-wide diversionary action. On the one occasion where Assmann actually speaks of the need for the two partners to join hands across the intervening areas it is expressly within his general context of "economic warfare" and primarily with the purpose of increasing their opportunities for their mutual economic support.

Thus we can see clearly in retrospect how, in those critical weeks after Pearl Harbour, the two coalition groups moved in diametrically opposite directions. The two Axis groups remained apart, in spirit no less than in space, each of them expecting the other to carry the main burden, each of them maintaining its own separate strategy and, therefore, envisaging the sea less as a pathway than as a barrier to protect them from the counterblows of their enemies. While the Allies came together, not only physically, but in spirit, and started to plan a truly global unified strategy based upon their supreme asset, the "command" of the world-embracing ocean; first to keep their enemies apart, and then, on the basis of overwhelming industrial power, to concentrate, thanks to their control of that all-surrounding element, their main efforts first against one and then

the other of their enemies.

So little, in fact, did German naval strategists understand that decisive issue, that long after they continued to expatiate upon the distraction of Allied strategy by their commitments all over the world, contrasting with it, to their satisfaction, the mutually interlocking diversionary effects of the two Axis strategies. Out of that pleasant dream not even the Allied landings in North Africa were capable of rousing them completely. The reactions indeed were deep and painful. We can gather something of the impact of that wholly unexpected blow from the dumbfounded help-lessness of German propaganda, as well as in its repercussions upon German strategy at Stalingrad, and, in the naval sphere, from the replace-

ment of Raeder by Doenitz. But although the impact was deep and painful, it is highly open to doubt whether their totally different approach enabled the Axis strategists to appreciate as clearly as their opposite numbers in Washington, London and Moscow, that the Allies had, in fact, thereby won the decisive round. Far from realising that their error had been due to a fundamental misunderstanding of the decisive military rôle of sea power in a global conflict, the German naval strategists were inclined to see it merely an unfortunate miscalculation of their "tonnage warfare," and hence, of seeking a remedy in the one-sided concentration upon and ruthless intensification of their submarine campaign. The signal collapse of that campaign in the following summer was, therefore, in all probability a harder psychological blow to them than even the landings in North Africa; the more so as it coincided more or less both with the catastrophic breakdown of their last abortive offensive on the eastern front, between Kursk and Orel, as well as with the fall of Mussolini and the Allied landings in South Italy. Thus, from the autumn of 1943 onwards, German strategy saw itself forced to concentrate all its hopes, no longer for victory, but only for a stalemate, upon a single, doubly hazardous issue; its ability to hold the Russians at bay in the East, while seeking to exploit the inescapable Allied landing in the West in order to inflict upon them a crippling defeat. With the success of the Allied landings in Normandy, German naval theory finally and irretrievably collapsed, leaving to German naval propaganda the lugubrious task of drawing up the balance sheet of five years of miscalculations, not so much for the purpose of at least seeking to penetrate to the truth so long obstinately evaded, as in order to merge the legend originated fortyeight years ago by Tirpitz finally and completely in the National-Socialist Thus it is no accident, but only fitting that this last note in the conflicting harmony of German naval strategy and propaganda should have been struck, not by Assmann, but by perhaps the ablest of German naval propagandists, Heinz Bongartz, and not in the now defunct Marine-Rundschau or in Nauticus, but in Goebbel's Reich.

HERBERT ROSINSKI.

CHAPTER VIII.

SEA-AIR-LAND POWER IN THE PACIFIC.

In 1918 the "air components," which had contributed largely to the defeat of the Germans, at sea and on land, were reft from the Navy and the Army, of which they were by then essential and integral parts, and formed

into a separate service, the Royal Air Force.

The reasons which had led to the decision to form the Royal Air Force were fundamentally those of supply and administration and had no origin or impulse in operational requirements—the basic cause of the separation can ultimately be traced to difficulties over the production and supply of aircraft engines, and ensuing dissension between the Admiralty and the War Office.

The result was inevitable. After a very short lapse of time, the cleavage between the Air and Sea, and Air and Ground forces became complete; the Air Force even evolving a peculiar and different theory and doctrine of war and discarding, as of historical interest only, most of what had

been learned in the years 1914-18.

Even the lightning conquest of France in 1940 by the integrated German ground and air force failed to recall the lessons of the past, and it required two years of hard fighting and a series of well-nigh mortal disasters in the Mediterranean and Middle East to bring a dawning realisation that Air power is not separate and distinct from Naval and Military power, and that it is as much part of sea and land warfare as any other form of fire power. Yet in Cairo, in January, 1943, Air-Marshal Tedder, making a speech for public consumption, said: "The essential lesson learned in the Middle East is that an air force is a separate offensive entity, striking at the enemy in co-operation with the army." air fighting has changed warfare and made it three dimensional. It has never been seen before and can not be described in terms of the old warfare such as long range artillery. We have learned this new kind of warfare, and the Americans are learning it. The Hun and the Jap have yet .to learn it." At the time of this speech the war in the Pacific had been in progress for over a year, and the Japanese, having swept all resistance before them, were dominating nearly half the earth's surface. Meanwhile the Americans had already turned the tide and were assuming the Since 1942 the technique of employing air power in modern military operations has once more gradually emerged. It remains, however, for the war in the Pacific to reveal the irresistible power of sea, land, and air action, when co-ordinated into one integrated force, working under one control and directed towards one end.

In retrospect, the inevitability of the Japanese war now seems so obvious that it must be a matter of some wonder that the only measures to safeguard Imperial interests and vital points were so utterly passive in character, and contrary to reality as it finally emerged. For example, the only three aerodromes in Northern Malaya, were indefensible from a military point of view and were captured or destroyed at the commencement of hostilities. Thus, air power, at a time when it might have been all important, played no part. Both in the United States and in this

country much emphasis is placed on the treachery and absence of warning of the Japanese attack, as if Japan were an ally or had at any rate feigned friendship. To see her action in correct perspective, it is necessary to have clearly in mind the main events in the preceding twenty-five years of Japanese history. Study of that history suggests that there could be little doubt about her attitude and her intentions.

Even in the last war Japan wanted to make an opportunity to seize certain portions of China, and she chafed against British and American restraint, which prevented her doing so. In 1981, in spite of her guarantees under the Nine Power Treaty, she invaded and occupied the three Northern Provinces of China and set up the puppet state of Manchukuo. In 1932, while the disarmament conference was assembling at Geneva, she staged an attack on Shanghai. In 1935 she finally withdrew from the League of Nations and annexed to the Japanese Empire the islands of which she was already in mandatory control. In 1937 she carried out a full-scale invasion of China and occupied the whole of the Chinese literal. All this was accompanied by a soft undercurrent of a regularly reiterated chorus. "Japan fully respects the Sovereignty of the territory against which she is compelled to take military measures"; or "Japan has no territorial ambitions," with the final crescendo, "Japan's great purpose is to establish a 'Co-prosperity sphere' in East Asia"; of which the limits were eventually revealed as including India, Australia, and New Zealand, and extending to the meridian of 180°. In the meantime, she was doing all in her power to damage or embarrass British interests in China and treating Britons in a manner, which, earlier in history and under a less pacific government, would inevitably have led to war.

Throughout this time also, she employed a continuous flood of agents in the guise of pearlers, fishermen, sea scouts, and so on, who were charting and mapping all the islands in foreign control, in the South and South-West Pacific. They were, in fact, openly and persistently engaged in espionage on a wholesale scale, of which no one except the Dutch really took much notice, with the result that Japan commenced the war knowing everything in the minutest detail about all their objectives, while many of the major operations carried out by the United Nations forces were based on only the haziest information hastily gleaned from hearsay sources. A good illustration is the big American attack in Guadalcanal. Both Australia and New Zealand were ransacked for any one who had knowledge of the Solomon Islands, and finally the attack was launched before any really reliable information could be issued to the operating forces.

The reliance placed by Japan on these pseudo fishermen, etc., is illustrated by the following incident. Australia, in her round-up of Japanese nationals on the outbreak of war, gathered in some four hundred fishermen. In subsequent negotiations for the exchange of non-combatant prisoners, Japan made it a sine qua non of any negotiations that these fishermen should be included. Their insistence made the military staff pause to think, and they intervened and stopped the exchange just as agreement was being reached. These men had the pilotage of all the S.W. Pacific Islands at their finger-tips, while we were still dependent on charts made from photographic reconnaissance.

At the outbreak of the war in Europe Japan made no particular move; but in 1940 she announced her partnership in the Axis, and in 1941 she occupied Indo-China, which gave her good anchorages to support the Malayan campaign and from which to launch the attack on Singapore.



A British escort carrier squadron. (British official photograph. Crown copyright reserved.)



British carrier aircraft warming up before taking off. (British official photograph. Crown copyright reserved.)

So much for Japan's policy in peace. Her war strategy was merely an unannounced intensification and acceleration of her peace policy. the Versailles Treaty, Japan had acquired, amongst other territories, the control of a line of some 1,400 islands contained in the Palau-Caroline-Marshall groups. In 1935 she annexed this line, nearly 2,500 miles long, as part of the Japanese Empire and refused any access to the islands in it. Without having to fire a shot she thus acquired a fortified frontier some 2,000 miles away from the Japanese homeland. The broad strategy of her initial operations was to extend this frontier westwards and eastwards. until, with the acquisition of Burma, the Haiwaian Islands, and the Aleutians, she would have surrounded herself with a peripheral defence system which would have absorbed the shock of any attack and kept war upwards of 2,000 miles from the homeland. In the actual event, this bold conception was never attained, as two defeats at Midway Island frustrated the attempt to secure the Haiwaian group. These islands have thus stood as a salient into the Japanese sphere and from them have issued the blows which are swiftly killing Japan.

The German attack on Russia in June, 1941, served to secure Japan's right flank for her and her first task was then to secure her left flank, which she did by putting the American Fleet out of action at Pearl Harbour on December 7, 1941. At the same time she attempted to land at Midway, and so effectively control the Haiwaian group, but failed. Simultaneously she cleaned up all foreign bases within the "Co-prosperity sphere"-Shanghai, Hongkong, Wake, Guam—while her main forces were moving south-west to capture bases in New Britain, the Gilberts and the Solomons, south to attack the Philippines and Borneo, through Malaya to capture Singapore, and west through Thailand to occupy Burma. In all she had perhaps twelve separate and distinct forces working simultaneously over a front of 7,000 miles by a depth of not less than 2,000 miles. In less than six months, by May, 1942, she was in possession of Burma and the first stages in the "Co-prosperity Sphere" were established, with the Japanese frontier line from India on the west to the Solomons on the east. In June she made a second attempt to capture Midway, and at the same time established herself in Kiska in the Aleutians. She was then absolutely dominant in the Pacific, and, for that matter, in the Indian Ocean, with Australia, New Zealand, and India to all intents and purposes defenceless before her.

In occupying Indo-China, Thailand, and Burma, her achievement was twofold. She not only extended her frontiers, but she also sealed off China from any contact whatever with the outside world. This sealing up of China was very complete, and except for what was being carried in by the American air transport organisation, from 1942 no supplies of any sort were reaching the Chinese south of the Yangtse.

Having fought a dozen lightning campaigns for the purpose of insulating herself, she then proceeded to consolidate her gains and regroup her forces for the four major tasks ahead of her:—

- (1) The occupation of Australia.
- (2) The conquest of India.
- (3) The pacification of China.
- (4) The continuance of the threat to America.

The outstanding characteristic of these initial operations was the way in which the Japanese achieved remarkable mobility, coupled with great striking power. In practically every instance the technique was to use aircraft from carriers for a preliminary softening-up process, followed—in the case of occupation operations—by carrier-borne air-covered landings, and then the disembarkation of aircraft to shore base. The first constructional measures ashore were the preparation of aircraft landing strips, but, whenever possible, she chose her points of landing where an airstrip already existed, and land-based air cover was put into action at once. An example of the efficiency of this type of operation is the occupation of the south-west of Borneo, which gave her two aerodromes from which she immediately covered the advance down Malaya and her attack on Singapore.

Japan was employing, for the first time in history, SEA-AIR power—a very different thing from sea power and air power. To have trained these forces in the involved—and, at that time, original—technique of air-supported amphibious landings without blazoning their purpose to the world, is noteworthy. It was no mean feat of organisation to have timed them to be at their appointed stations at the crack of the pistol, and subsequently to maintain them in action in their widely separated and dispersed zones of operation. The essence of the Japanese success was speed of movement, preceded by careful planning and meticulous preparation, and followed by the integrated action of sea, air, and land forces. Probably 50 per cent. of the land forces were Marines—Navy trained.

To the Allies, overwhelmed by surprise, and with all that they had in the Pacific—troops, material and bases—lost, the Jap did indeed assume the shape of a superman; and some time elapsed before the disguise was strip by strip—peeled off. Yet he now stands revealed in defeat as full of weaknesses.

Early in 1942 the Pacific presented to the Allied Powers, with no bases, no equipment, and no co-ordinated plans, a grim and gloomy picture. They had already lost what they could ill spare after the catastrophes of Dunkirk, Cyrenaica, and Greece, and the German pressure in the Western Desert of Egypt was steadily developing, so there was nothing more that we could send to the Far East from Britain. The whole onus of meeting the full outward surge of the Japanese—before it enveloped Australia and New Zealand—fell on America.

The task presented to the Americans was twofold:—

(1) To check the Japanese outward surge.(2) To strike at the vital core of Japan itself.

The two problems produced two schools of thought. That of General MacArthur, whose immediate task was to stop the Japanese, and that of Admirel Nimits, whose first processing the consequent in the consequent in

Admiral Nimitz, whose first preoccupation was to conserve his forces and gain time once again to build up the American Pacific Fleet to match

the sea power of Japan.

The doctrine of the MacArthur school was to engage the Japanese on the circumference of the defensive circle which they had established round themselves, and, by means of a series of amphibious operations, tangential to the circumference, press them inwards until the Philippines were occupied and bases were established on the Chinese mainland from which a grand assault on Japan itself could be staged. The doctrine of the Nimitz school was to ignore the Japanese on the circumference of the circle and to strike chordally across inside of the co-prosperity sphere, using enormously powerful carrier task forces to capture, and then re-establish, a series of progressively advancing bases across the Pacific to culminate in a direct attack on Japan.

In the event, these two solutions, conceived separately and rather in opposition to each other, have been coalesced into one as complementary and supplementary to each other. MacArthur striking out tangentially, with integrated sea, air, and land forces at the Japanese peripheral line, ensured that the supply lines from Japan are kept working at high pressure. Nimitz at the same time progressed in a series of gigantic bounds across those vital lines of communication, bounds from the Haiwaian Islands to the Gilberts, from the Gilberts to the Marshalls, and thence to the Marianas, exterminating the Japanese garrisons as he went and establishing in each group of islands a first-class naval and air base from which to stage the next bound.

Out of this Central Pacific strategy emerge two important lines of thought.

(1) That the core of the fleet is now the aircraft carrier and that the function of the rest of the fleet is to ensure the safe operation of the carrier force.

(2) That essential to the fleet is a constructional organisation, which is completely self sufficing and can be disembarked anywhere to prepare a naval or air base. This Seabee or Construction Battalion organisation is one of the most remarkable developments in this theatre, and when it is realised that, integral with the U.S. Navy is the Marine Corps, completely self-contained with it's own air force and now numbering well over a quarter of a million men, then it will be seen that a fleet of this nature is perfectly able to undertake the reduction and capture of a fortress base: as is proved by such remarkable operations as the capture of Tarawa, Makin, Kwajalein, Saipan, and Guam.

The first step towards checking the tide of Japanese aggression was the arrival in Australia, about the middle of February, of a very large convoy of American troops. Up to then it had been a case of small, ill-equipped garrisons of Australians putting up a fight at key places, such as Rabaul, Salamaua, Buna, and, in due course being overwhelmed by the advancing flood of Japanese. With the Americans came aircraft and equipment, and things began to be more evenly balanced between defence and offence, particularly in respect of aircraft, of which the Australians had literally none. En route this convoy was attacked by bombers from Rabaul, but sixteen out of eighteen attacking aircraft were shot down by fighters from one of the escorting American carriers, and the attack failed. This was the first indication that American aircraft might be superior to the Japanese. Out of this convoy has grown the enormous organisation which has been built up in Australia to support the New Guinea campaign, and in New Caledonia to support the supplementary Solomons campaign. It is on these bases that the strategy of the South and South-West Pacific, i.e. MacArthur's campaign, has relied.

At this stage one would have expected that the Japanese, with their naval tradition, would have commenced a deliberate naval blockade of Australia, by ship and submarine, and have made every endeavour to cut the American lines of communication and so prevent the development of these bases. The Jap never seriously embarked on any such campaign, whereas the Americans have waged a ruthless war against Japanese sea communications, both by sea and air, and with such effect that the Japanese have, to an appreciable extent, been compelled to divert ships of war, cruisers, and submarines to transport duties. The distance from Sydney to San Francisco is well over 6,000 miles, on a route flanked by

Japanese bases; while the distance back to Japan from the most advanced

fighting point was little over 3.000 miles on a secure route.

This, perhaps, is an illustration of the curious inconsistency of the Japanese. They commenced the war with a very precise realisation of the power of an integrated sea-air-land force, a good deal in advance of either the British or American doctrine of war. Moreover, they realised that air was essential and common to both naval and military operations, and that if applied with sufficient weight would prove decisive at sea or With this conception, they commenced the war with more aircraft and seaplane carriers than the rest of the navies of the world put together, and with carrier-based aircraft they covered both naval and military operations, achieving thereby flexibility, speed, and power of striking at the decisive point. Yet they apparently failed to appreciate the golden opportunity of using sea-borne air attack, combined with submarines, against the American lines of supply, when such attacks would have been disastrously effective.

By May, 1942, the Japs were regrouping their forces for four main tasks. Of these, the seizure of Australia was likely to be the most decisive, and therefore was the most urgent. The Americans appreciated correctly that the South and South-West Pacific was the immediately vital zone. and they had concentrated the bulk of their sea, land, and air forces down there. The Japanese operations took the form of a two-pronged advance from the pivotal forward base at Rabaul. One prong thrusting directly south through New Guinea, the second being a flanking movement to the eastward through the Solomons. This latter might equally well have been a direct threat to New Zealand.

If either of these thrusts had been successful the United Nations would have been finally deprived of any possibility of setting up a base in the Western Pacific, and the war might well have become interminable, with

all the advantages of position possessed by the Japanese.

The advance through New Guinea, opposed foot by foot from Buna to Kokoda, and over the Owen Stanley Mountains, was finally brought to a standstill by the Australians at the last ditch stage, 32 miles from Port Moresby. Any successful intervention from a flank during these operations would have swallowed the meagre Australian forces, and Australia's fate would have been sealed. A flank attack actually did emerge from the Solomons at the beginning of May, when transports moved westward towards New Guinea preceded by a powerful covering fleet which, moving southward, met the American Fleet in the Coral Sea. An engagement took place with the fleets never less than 160 miles apart, each side attacking with carrier-borne aircraft. American aircraft again proved themselves superior, and the Japanese lost one large aircraft carrier, a cruiser, and some smaller ships, 22 other ships damaged and 104 aeroplanes destroyed, the rest of the convoy retiring whence it came. The American losses were one aircraft carrier, some sixty aeroplanes, and two small ships.

This Battle of the Coral Sea will probably go down through history as one of the decisive battles of the world. It was the first occasion on which sea-air power met sea-air power; and, during that encounter the fate of half the world hung in suspense. This defeat was the first perceptible

check to Japan's flow outwards.

The next sea battle, the following month, at Midway sealed Japan's fate. The battle of Midway is interesting in many respects. The Japanese



must have reasoned that the Americans could only have the remnants of a fleet left after Pearl Harbour. After the battle of the Coral Sea, they must have deduced that the whole of that remnant was concentrated in the South Pacific, as in fact it was. By a piece of brilliant inductive reasoning, the Americans calculated that the next immediate move of the Japanese would be in the middle of the Pacific or to the North. They calculated the risk, brought their fleet up from the south and concentrated everything at the Haiwaian Islands. But even so, their strength was considerably less than that of the Japanese, and their position was unenviable. The Americans were using everything that they had, and in losing that they would have lost all, so that there was no question of lightly embarking on any slugging match.

The Japanese Fleet was spotted by air reconnaissance 700 miles or so from Midway, and was subjected to continuous air attack throughout the time of its approach. On the fifth day, the fleet—some eighty ships—turned and made for home, having lost, apart from a large number of ships damaged, at least seven big ships sunk, and, among them, four big aircraft carriers.

The repercussion of this battle, by reason of its effect on Japanese sea-air power, was immediately felt in the South Pacific, three to four thousand miles away. After their defeat in the Coral Sea, the Japs had begun once more to accumulate a force in the Solomons, and for the first time they were carrying out such an operation without proper air cover. Their nearest air base was at Rabaul, 675 miles away, and their intermediate bases were not ready, so that land-based air support was impracticable. Thus, by the loss of four carriers at Midway, they were deprived of the means of placing air power at a decisive point when it was vitally necessary.

The Americans grasped the opportunity, and, with a strong combined task force attacked the Japanese key position—the two adjacent islands of Tulagi and Guadalcanal, under carrier-based air support. They succeeded in establishing themselves, but it took six months' fighting, during which the Japs made four strong attempts to recapture the island, before Guadalcanal was finally cleared. This victory killed the threat to Australia, and established, in its stead, a very serious flanking threat to the vital Japanese base at Rabaul and to their line of communications northward. From now the pressure on the Japanese peripheral line was steadily increased, necessitating more and more supplies from Japan, and putting a growing strain on their long lines of communication.

It was at this stage that the American Navy began to emerge again after its battering at Pearl Harbour, and with a growing fleet Admiral Nimitz started those strategic attacks on the Japanese lines of communication and Japanese bases in the Gilberts, Marshall, Palau Islands, which have now brought the Americans to the Philippines and the Marianas, within bombing distance of Japan. Simultaneously, with this drive across the Pacific, a separate but complementary attack was carried out by air forces based in China. One force, under General Chenault, in addition to assisting the Chinese forces, bit into the Japanese line of communication between the coast of China and Formosa. Operating parallel with this force was a force of Super Fortresses, which are striking at the industrial organisation in Manchukuo, and at the very heart of Japan itself. In two years, the Americans brought the war, step by step, over perhaps four thousand miles, to the very gateway of Japan.

The Americans successfully achieved the difficult and hazardous task of making a landing on the strongly-held island of Guadalcanal, but it was six months before they had cleared the island of Japanese. The Australians were two years over the clearing process in New Guinea, and there is a long way yet to go. As a comparison: in the Cherbourg fighting the Americans in 21 days' fighting wrested from the Germans an area not much smaller than Guadalcanal, and took 37,000 prisoners, including the commanding general: In some 2½ years of fighting in the Pacific, not more than 500 Japanese prisoners had been taken, and amongst those, not one officer.

Such things signify a fundamental difference between this War in the Pacific, and any other war. Westerners have a regard for human life, and put a certain value on it, and after the expenditure of so much, will say "enough, the results are no longer commensurate with the sacrifice." Not so with the Japanese—the individual is prepared to die, and apparently thinks that he achieves something by the very act of dying. Noticeably often, the Japanese soldier dies, not the fanatical death of the Ghazi, who will court death provided it will enable him to kill first, but the death of the fatalist, who will just lie down and die because he thinks death is inevitable. Thus it is more meritorious to die, even passively, than to be taken prisoner fighting to the last. In Saipan, hundreds of Japanese who had been surrounded and could not possibly achieve anything by further resistance, refused to surrender and carried out hopeless sniping from the shelter of elaborate cave defences. It was necessary to destroy them in their shelters, wholesale, by means of flame-throwers. That is the sort of fighting which is going on in the jungles of New Guinea, and in the various Pacific Islands, and it makes for a long drawn out, and debasing sort of war, without chivalry or decency. This attitude to life and death probably permeates the seventy odd millions who form the population of Japan, and one naturally wonders whether it is a psychology that will respond to the coercion of bombing alone.

In conclusion, I should like to draw attention to certain features of the Japanese attack on Pearl Harbour on December 7, 1941. The attack was a very exact attempt to destroy ships, aircraft and air bases, and nothing else was touched. For instance, all the port facilities and harbour installations at Pearl Harbour were untouched, while every ship in harbour was hit and damaged.

One hears loose talk of the Americans being taken by surprise through simple neglect of elementary precautions. Facts in no way support this. While the negotiations were going on at Washington, the American air forces were at war stations, with their aircraft properly dispersed, and in pens, and with guns and bombs on board, ready for action. The air force was then told that the danger from sabotage was greater than the prospects of war. This meant a diametrically different arrangement of aircraft. Instead of being dispersed, they were brought in and concentrated in the hangars and on the aprons under guards. It was a regulation that aircraft on the aprons should not be armed and bombed up, so bombs and guns were removed.

The next incident was that a defence exercise was arranged for the night of December 6 and 7, involving ships and aircraft, one formation of carrier-borne aircraft being due to come in early in the morning. They actually arrived in the middle of the Japanese attack and five were shot down. The defence organisation was in fact in operation, and the radar

plots of the approaching Japanese were actually shown, but were inter-

preted as being part of the exercise.

The Japanese bombing was astonishingly accurate, but curious things were hit. At Hickham Field, the big army aerodrome, a particularly heavy attack was made on a base-ball diamond, which was pulverised. The P.X.—equivalent of our N.A.A.F.I. canteen—was also picked out for special attention. It was afterwards found from a captured target map, that the Japanese had prepared their maps from an old American blue-print, on which the base-ball diamond was shown as the bulk fuel storage tanks, and the P.X. as the main machine repair shop. The sites for these had been subsequently altered. Then every single ship was shown by name in the berth it normally occupied. This led to an unfortunate small tanker, which was occupying the berth of the big aircraft carrier Enterprise, receiving five torpedoes.

Every ship in harbour was sunk or damaged. By good fortune all the aircraft carriers were out, and that has probably been one of the big factors in deciding the issue of the war and in giving American sea power a new shape, which may well alter the course of the future and vitally

concerns us in the present.

L. L. MACLEAN.

CHAPTER IX.

THE LANDING IN NORMANDY.

Almost in the centre of the broad sweep of coast facing the Bay of the Seine is the small town of Courseulles. It is marked from the sea by a narrow waterway which becomes little more than a trickle across the broad, flat sands at low tide. From the few buildings around this tiny estuary, a single street winds up from the east bank to the main part of the town, a quarter of a mile or more inland. It was here that the German military commander of the strip of coast which will always be known as the Gateway to Europe used by the liberating Allied armies, had his headquarters. They were in a long, two-storey building approached through a courtyard off the main thoroughfare. Up and down the great length of coast which the Germans liked to think of as "the West Wall" there were numerous other Nazi military headquarters, and the problem concerning them all, until the morning of June 6, 1944, was the same. Would the Allies attempt to return to Europe in their particular sector?

It was two days after the question had been answered once and for all that I saw the Nazi Operations Room in Courseulles. A huge painted swastika still decorated one end of it. In the garden outside was the warren of deep air-raid shelters where, no doubt, the Germans sheltered when the R.A.F. and U.S. air forces rained down their bombs in the early hours of that fateful June 6. But by far the most interesting thing in that headquarters was the remarkable model of the area which the enemy had used as his Operations Table. Everything was reproduced on it in There were gun positions, both coastal and anti-aircraft, beach obstructions, strong points, anti-tank obstacles, barbed wire and even model vehicles on the roads. A keyboard controlled a light system which immediately picked out the various units. It was both thorough and realistic—until one turned from the land and looked out to sea. And there the German imagination had fallen down. The enemy that had to be met was depicted as coming in in less than a dozen vessels, mostly of the landing-craft variety. One wondered what the feelings of the German Commandant were when, after working for months on that conception of a seaborne attack, he was suddenly faced with the unparalleled armada that literally filled the Bay of the Seine on the morning of June 6. The number of Allied vessels taking part in the assault was 5,143, and it is only fair to say that many better judges and more imaginative individuals than the German Commandant realised when they saw that mighty sea force that they had quite failed to picture in their mind's eye the truly amazing scene that was before them.

The first "eye-opener" came to me a few days before D-day, when I joined the headquarters ship, H.M.S. Hilary, lying off the Isle of Wight. To reach the Hilary, a fairly long journey had to be made down Southampton Water and out into the Solent beyond. All types of vessels were there, and even from a small boat, which gave one a worm's-eye rather than a bird's-eye view, it was possible to get a fair impression of the orderliness of that unforgettable gathering. Spithead was filled with shipping and, on the mainland side of the Solent, landing craft were gathered in unbelievable numbers. All alike, and with a grotesque yet

fascinating forest of balloons above them, they stretched out of sight in the direction of Lymington and Hurst Castle. Some of the L.C.Ts. were already loaded. Soldiers rested on top of the tanks, stripped to the waist in the warm sunshine. The long decks of L.S.Ts., too, were crowded with vehicles and, no doubt, their capacious interiors were also well filled. British and American ships were lying side by side, and there was new inspiration in the close proximity of the fluttering White Ensigns and Some vessels had the British patchwork system Stars and Stripes. of camouflage and others the neater twin shades of grey used by the Americans. Looking upon this armada, the evidence of one's eyes might have been considered sufficient to justify the confident promise made by a British Admiral to naval officers on the eve of the invasion: "What Philip of Spain failed to do, what Napoleon tried and failed to do, and what Hitler never had the courage to try, we are about to do, and with God's Grace we shall."

There was the knowledge, too, that, impressive as the sight of such sea power might be, there was still more—much more—beyond the range of normal vision. Up and down the coast ships were gathered together for this unprecedented naval occasion. In the great harbours of the north, the big merchantmen with their volunteer officers and crews. waited to set off with the mainstream of reinforcements and supplies. the west were more ships of a similar kind, so that when the two streams met, the sharp turn eastward at the Lizard was to become as trafficcrowded as the entrance to any busy harbour. In smaller ports were coasters and other vessels, while every inlet, from the haunting Cornish coast to the soft Essex seaboard, had its quota of small craft. And behind all this, like a mighty protecting arm, was the concourse of fighting ships. A preliminary list of those to be actively engaged on D-day included such famous names as H.M.S. Warspite, Rodney, Ramillies and Nelson (battleships), the U.S.S. Arkansas, Texas and Nevada (battleships), H.M.S. Glasgow, Enterprise and Orion (cruisers), the U.S.S. Tuscaloosa, Augusta and Quincy (cruisers), and destroyers with notable battle honours such as H.M.S. Onslow and H.M.C.S. Sioux.

It is impossible to over-emphasise the importance of the work that was done in the weeks and months before the ships began to assemble. In many ways the story of the successful landing of our armies on the Continent is the story of those months of painstaking and continuous effort, with one sentence added—"and then the machine was set in motion and the Invasion was accomplished according to plan." In the immense variety that went to make up the main effort, civilians played a notable role. Workers in many areas far removed from the sea, engaged in the production of prefabricated parts, which later came together to make whole fleets of landing-craft. In the final spurt just before D-day, civilians with an average age of fifty-eight, aided soldiers in a U.S. Army port command to move 363,755 tons of war material in a month. This was almost twice as much as had ever been handled in the ports in that command in any previous month.

A vital consideration in the final loading of the invasion vessels was convenience in unloading. The first wave of the assault had to be made up into self-contained combat teams and all dispositions had to be carefully balanced in every ship that followed the assault forces in. Risks from enemy action during the passage had to be spread and the breaking up of units into mixed loads for the various forms of sea transport was

the responsibility of the "mincing machine", as the marshalling area mechanism became known to Movement Control staffs. An inter-service organisation which was given the name of "Build-up Control", co-ordinated the movement seaward from the concentration areas. "Turn-round control", which was part of "Build-up control", was responsible for the execution of the latter's plans in terms of assault craft and shipping movement. It was a naval staff organisation which, once started, had to continue day and night without ceasing. It was but one of the many naval wheels which helped to make up the intricate timepiece of the great assault.

The man, under General Eisenhower, who was responsible for all these branches of sea planning—indeed, for planning which overlapped the shores on both sides of the Channel—was Admiral Sir Bertram Home Ramsay, K.C.B., K.B.E., M.V.O., Allied Naval Commander of the Expeditionary Force, whose tragic death in an air accident six months later was to rob the Allies of one of the most brilliant commanders of the war. No adequate tribute can be paid to his services in a few brief sentences, but the magnificent achievements of D-day and the continued success that attended the naval effort in the months that followed will ensure for him a high place in our seafaring annals. Chief of Staff to Admiral Ramsay was Rear-Admiral George Elvey Creasy, C.B., C.B.E., D.S.O., R.N. The two task force commanders for the invasion were Rear-Admiral Sir Philip Louis Vian, K.C.B., K.B.E., D.S.O. and two bars, and Rear-Admiral Alan Goodrich Kirk, U.S.N.

The task forces were complete units in themselves and each consisted of an assault force, a follow-up force, a bombarding force and minesweeping flotillas. The Western Task force, which was composed in the main of United States ships, was under the command of Admiral Kirk and the Eastern Task force, composed mainly of British ships, was led by Admiral Vian. The Royal Canadian Navy made a considerable contribution to the latter and also supplied a minesweeping flotilla to the Western force. There were three naval assault forces and one follow-up force in the Eastern Command and two naval assault forces and one follow-up force in the Western command. The navies of other allied nations were represented, but the overall division of shipping was roughly 60 per cent. British and 40 per cent. American. Of the warships and larger vessels involved (down to L.S.Is.) 75 per cent. were British. The actual figure of the total number of vessels taking part in the assault—5,148—was given to me some time later by Admiral Ramsay himself.

So long as the Germans had aircraft to fly on high-level reconnaissance it was clearly impossible to hide this mass of shipping from them. One photograph of the Solent, for instance, could be guaranteed to rouse the enemy to a high state of alarm. And, after all, the assault, which must be made from the sea, was only the fulfilment of a long-standing promise. After many months of waiting, there were still people in England who questioned whether the huge seaborne attack would ever be launched. The German High Command cannot have had any such false hopes, and the two questions that continually faced them were "When?" and "Where?" From the low countries right down the coast of France, the enemy had defences to which he was constantly adding. The frontal attack on Dieppe had taught us that the key points of this defence line—particularly the harbours close to our shores—were nothing less than amazing modern fortresses. Protected by enormous masses of concrete,

the defenders were in a position to lay down a heavy and concentrated fire on any point of approach. The men—mostly Canadians—who gave their lives at Dieppe so that we might know these things, contributed directly to the success of the great assault and materially cut down the ultimate cost in human lives. They may even have misled the German High Command into believing that a port on the Continent would be an essential objective in any attack launched from Britain.

Not until the evening of June 3, which would have been the last night before our ships left for the assault if there had not been a last-minute postponement of twenty-four hours, did I hear where Allied Forces would land. The Headquarters staff of a Canadian Division was going to France in H.M.S. Hilary, and it was when a Canadian Colonel briefed War Correspondents from the Dominion that I heard such names as Courseulles, Bernieres, Arromanches and Port en Besin for the first time and studied a large-scale map of the Bay of the Seine. It was to be an assault over open beaches, and the task of the naval forces was to land the military forces in their respective sectors. The German defences on the beaches, we were told, included angle-irons and hedgehogs, each of which had a mine or fused shell affixed to it, wooden posts, also with shells on them, and a cement obstacle. The German defences beyond the beaches were good, with some heavy guns sheltered by as much as twelve feet of solid concrete.

Throughout Sunday, June 4, the weather steadily deteriorated. The attack was due to go in at daybreak—about four hours before high water—and although there were still some hours to go before the final decision would be made as to whether the next dawn would be that of D-day, it was essential that large numbers of the slower moving craft should put to sea during Sunday. Landing craft, in seemingly endless line-ahead formation, moved quietly through the anchorage towards the open sea. Overhead there was the continual drone of aircraft flying to or returning from the French coast. But the sea was grey and white-flecked even inside the shelter of the Isle of Wight. Finally word went round that a post-ponement of twenty-four hours had been decided upon.

When Admiral Ramsay paid a last-minute visit to the Hilary he showed no sign of anxiety although his load of responsibility had been enormously increased by the fickleness of the weather. His was the final word on sea conditions on which the Supreme Commander would act. The assault had to be "put on" during the next three days, I was told, otherwise the tides on the other side of the Channel would not fit in with the invasion time-table until a fortnight later. It would not have been possible to keep thousands of troops in small craft for the whole of that period and, quite apart from the problem of disembarking and then reembarking them, there was the great risk of a breach of security.

Mr. Churchill had paid a visit to the concentration areas and Admiral Ramsay mentioned to Commodore G. N. Oliver, who led force "J" in H.M.S. Hilary, that a good deal of persuasion had been needed to keep the Prime Minister from accompanying the expedition.

The weather was at its worst during the night of June 4-5, but there was a slight improvement in the morning. Conditions were far from ideal when it became known, around midday, that the primary decision to make the attack next morning had been taken. Once again the landing craft began to move out, and this time the anchorage continued to empty itself seaward until the Hilary herself sailed at about 6 p.m. The mine-

sweepers, we knew, had made an early start and were probably already engaged on their main task of sweeping a channel straight in to the French coast and thirty-three miles long. H-hour was fixed for 7.25 a.m. on June 6 in the sector we were heading for. For the Americans to eastward it was to be fifty minutes earlier.

The voyage across the Channel that night will not be easily forgotten by those who made it. The wind was still blowing almost at gale force and high seas were running. There was plenty of motion on large ships, and it was not pleasant to think of what thousands of men-many of them without much experience of the sea-were going through in the landing craft and other small vessels. Before darkness came it was possible to pick out groups of ships in every direction. They appeared to be of all shapes and sizes, but they had one thing in common—they were all heading for France. So were the aircraft that flew overhead, their new black and

white recognition stripes covering half their wing spans.

It was from the air that the first stroke was due to come. British and American airborne divisions were due to drop down behind the enemy's front line several hours before the main forces reached the Normandy sea-The success that was achieved by both these units, the British east of the Caen canal and the Americans in the Cherbourg area, is now a matter of history. The battle started by the gallant paratroops and glider-borne men was to be taken up by the bombers whose task it was to soften the area into which the assault forces would pour. They were still engaged in this when we came within sight of the French coast, or rather, of the hugh fires on the coast, as dawn broke on June 6. The night attack was carried out by about 750 heavy bombers, led by the Pathfinders, while an additional force had been detailed to bomb certain heavy batteries which the Germans were known to have in the region.

While this force was operating over the whole front-to-be, the naval forces were silently approaching the coast. The minesweepers and dan buoy layers had done their work supremely well. The broad channel cleared by the sweepers was marked by glimmering dan buoys which slipped by in the night with the regularity of street lamp-posts. Right to the enemy's doorstep the sweepers went before turning aside to make way for the mighty fleet of vessels coming in their wake. The scene as daylight came was indeed memorable. Ships took shape everywhere. Destroyers, moving at high speed, could be seen away to the west where the first salvoes of the naval bombardment were to be expected at any time. Landing craft and L.S.Is. were slipping in towards the shore both to east and west of the Hilary. A small cluster of craft carrying a Royal Marine Commando, which had been in company with us throughout the night, went across our stern. They were still tossing like corks, but nothing could have been more heartening than the sight of the cheerful, expectant faces of the men in them. The heavy bombers had finished their work over the beaches and German defence positions two hours before H-hour. The attack had been maintained, however, by the medium bombers detailed to strike at coast defence batteries.

As we finally made out the thin line of the Normandy coast, fresh waves of aircraft droned overhead. They were Fortresses and Liberators of the 8th and 9th Air Forces. In the last thirty minutes before H-hour they were going to drop 2,400 tons of bombs on the British beaches and 1,900 tons on the American beaches. Fighter bombers were in close support. It was a bludgeoning use of air power, but, to those who looked upwards from the ships, there had been another indication of our air supremacy, which was equally if not more impressive. Under cover of Allied fighter screens, the armada of ships engaged in the assault had crossed the Channel completely unmolested by German aircraft. Some naval officers and men who had vivid memories of Dunkirk, Crete and early convoys in the Mediterranean, found it very hard to believe that this had actually happened. "Our aim," a senior R.A.F. officer had said to me, "is to bring about a situation which will enable the Navy and Army to carry out this operation without effective interference from the German air force." The aim, as we have seen, was more than fulfilled.

The naval bombardment opened away to the west, where the land curved out towards Cherbourg. Yellow flashes of gunfire caught the eye and then the roar of the bombardment, that was to grow steadily in intensity, followed. At first it was the deep roar of heavy guns. Then, more faintly, the note was raised and more flashes could be seen from ships apparently firing at point-blank range off shore. These, we knew, were the Hunt class destroyers, who were boldly to follow the storming troops in and engage any German coastal batteries that came to life after the air forces had finished their devastating onslaught. Even closer to the shore the rocket-firing craft were pouring their obliterating fire on to enemy positions. In less than half an hour many thousands of rockets, each as destructive as a fair-sized shell, were sent over four main landing Every time one of these strange craft fired, the whole vessel disappeared in a sheet of flame. No man remained above decks except the commanding officer who, protected by a specially strengthened deckhouse, discharged the rain of missiles.

Three miles off shore in the Hilary, one could clearly see the few houses along the waterfront at Bernieres and Courseulles. The church steeples stood out as landmarks and it was possible to place the narrow opening to the tiny harbour at Courseulles. There had been some German answering fire from away to the westward and on the eastern flank, but the heavy guns straight ahead of us were silent. We hoped that all other defences had been dealt with as faithfully by the bombers and the bombarding ships. The main bombardment ceased and ears were strained for the sound of small arms or machine-gun fire, but the distance was too great. Instead there was the hum of aircraft engines and an occasional shout from soldiers in a passing landing craft. "The greatest amphibious operation in history " (in the words of Admiral Ramsay) was approaching Yet in some strange way it seemed an anti-climax. had been no German interference from the sea—that was hardly expected -no attack from the air, and the bombers had even succeeded, apparently, in silencing the powerful enemy batteries near Le Havre which could have dropped shells into the anchorage. The Navy, which had gone forth prepared to meet anything in order to achieve its object of landing the military forces, felt a little cheated. That, however, was entirely by the way, because their object was rapidly being attained.

Reports began to come in of the success of the airborne attack across the Caen canal, of landings already achieved, and, here and there, of stiff localised German opposition still to be overcome. In two and a half hours practically the whole of the initial assault force, with all its supporting arms, including the bridging companies, was ashore. The first American infantry and tanks had got ashore at 6.83 a.m. and, at one point, United States Rangers were fighting their way in in the face of heavy machine-

gun and mortar fire. News was not plentiful from the western sectors, but after a comparatively short time we were satisfied that success had crowned the efforts of our great Ally as well as ourselves. We were soon to hear, too, how the Navy personnel in the assault landing craft had covered themselves with glory not only on our own beaches but also on those of the Americans. With utter disregard for themselves, the naval men ran their flimsy vessels through the mines and up on to the beaches. A very large proportion arrived safely. Unhappily, having discharged their cargoes of fighting men, more than a few of the small assault craft came to grief as they tried to come off stern first through the ugly, mined beach obstacles.

There were innumerable acts of individual gallantry by both officers and ratings. One Royal Marine coxswain of a L.C.A. acted as a human rudder, hanging out of the stern of the boat almost up to his armpits in the sea, not only for the seven miles the boat had to go from the parent ship to the beaches, but also for the same distance back. L.C.Ts. and L.C.Is. found themselves unloading at points where parties of Germans were still fiercely resisting. From the open decks of their craft, the sailors fought the enemy sheltering behind massive concrete. It is even recorded that they ran up the beaches after the infantry in order to wish them a final "Good Luck!"

The initial assault over, ships by the hundred followed in with the powerful support forces. It was two-way traffic all along the Bay of the Seine, with vessels crowded with men, guns, tanks and vehicles constantly going in to take the place of those coming out empty. After only a short lull the naval guns were in action again, putting down heavy concentrations of fire according to the directions passed from forward observation posts. A battleship (the Warspite, I believe) and the monitor Roberts were engaging German heavy batteries in the direction of Le Havre. And, as D-day passed, there was no slackening of the naval effort to add to our forces already ashore. The Luftwaffe made its first appearance over the eastern anchorage in the late afternoon. A few bombs were dropped without effect and then the Germans could be seen racing away with Spitfires on their tails. It was right that, as dusk came at the end of this triumphant day, we should be reminded that some had willingly paid the high price that might have been demanded of so many more. Two men of the Royal Navy, taken by boat from the Hilary, slid quietly to their last resting-places from under the White Ensign of their Service.

The defence at night of the great amount of shipping in the anchorage was a problem that had received the most careful consideration. Defence had to be provided against both air and sea attack. In the air, night-fighter patrols were in operation and, as the ships soon proved, a tremendous barrage of anti-aircraft fire could be put up if odd German planes got through. But the sea defence of so many vessels anchored close to such enemy-held bases as Le Havre and Cherbourg, was not easy. An elaborate system was worked out in squares, each with its inner and outer patrols. Destroyers, corvettes and other ships were used for the patrols. Minesweepers and other craft, capable of fighting off E- and R-boats, formed an outer ring of defences for the anchorage. The M.T.Bs. of Coastal Forces went boldly to watch for their German counterpart right under the enemy batteries at Le Havre and Cherbourg. There were many engagements, but for long the "little ships" of the Royal Navy had been the masters of the E-boats, and there was no change now. Before the American

Army threatened Cherbourg the German light craft had been driven out and were operating from the region of St. Malo. Strong forces in Le Havre tested our men to the utmost, but the enemy could not escape their grip.

So, although there were noisy nights in the anchorage and a slight amount of damage was done, mostly by air attack, each morning one looked around and found neighbouring shipping as it had been when darkness

fell the previous night.

More than a month after D-day, when the Admiralty gave the first list of our naval losses, it consisted of two destroyers (H.M.S. Boadicea and Swift), three frigates (H.M.S. Mourne, Blackwood and Lawford), one trawler (H.M.S. Lord Austin), and one auxiliary (H.M.S. Minster). As was disclosed later, the U-boats made a determined effort to work up-Channel to get among our shipping, but this, too, had been the subject of excellent defence preparations and forces, working mostly from Plymouth, intercepted practically every German submarine that made the attempt, and a gratifying number was sunk.

Supplies continued to go in over the beaches, but, as soon as the coastal strip was in our hands, much more ambitious schemes were put in hand. Two amazing pre-fabricated harbours, known as Mulberries, had been built in England. One was for the American sector and one for the British. Huge floating concrete sections, each of which displaced around 6,000 tons, were towed slowly across the Channel by a fleet of 85 tugs. A minimum of 210 tows was required, involving a weight of over a million tons. These remarkable ports slowly took shape, but a heavy storm, which broke over the anchorage area on D plus 13, practically destroyed the American Mulberry. The British harbour, slightly less exposed, survived and was a great success. Designed to handle 3,000 tons a day, it on occasions trebled that amount. Another protection for shipping, known as Gooseberries, were in place much earlier. These were formed by sinking a number of old steamers side by side in a broad "V" so that small craft could take shelter inside them. They proved most valuable.

In the early days after we had gained a foothold in France it was the small unloading craft and the astonishing "ducks", which moved over sea or land with the same ease, that linked the supply chain between England and our new front line. They swarmed around the shipping and day by day the whole bay was alive with them. In the first twenty-four hours, 250,000 men were landed, and by the twentieth day a million men were ashore. An enormous amount of equipment and stores had to follow this army, and the small craft laboured manfully to get all that was needed on to French soil.

There are many angles of the naval operation that led up to the return of Allied armies to the Continent which cannot even be touched upon in this brief review. Sufficient it is to say that, through the courage and devotion of men in ships, the armies were able to push on and prepare for great victories, and as early as D plus 10, H.M. the King could take passage in the cruiser Arethusa and set foot safely in liberated France.

GORDON HOLMAN.

CHAPTER X

CARRIER OPERATIONS.

To students of Imperial Defence the development of aircraft carrier operations during the present war will be of intense interest and importance. In the course of that development may be seen the shaping of answers to naval problems which have been challenging expert opinion during the last two decades; bomb versus battleship; the defence of convoys against air and submarine attack; whether ships can approach

enemy coasts; what is the future rôle of the battleship.

During this war England and her Allies have, more than ever before, been dependent on the maintenance of sea communications, because every person is in it, and the need for importing food and materials is greater than it ever has been. With a wider variety of weapons and new fighting methods, and with more intensity of effort than at any period in the last war, German forces have attacked these communications. Using long-range aircraft, far more numerous submarines, and bases for both spread along the whole western seaboard of Europe, our enemy has attacked with the object of totally sealing off our Atlantic sea-lanes. He has attacked also in the long narrow route through the Mediterranean with all types of aircraft and varieties of weapons. This effort has been reinforced from time to time by his heavy ships venturing out into the ocean to menace lightly-defended convoys and ships sailing singly. His aircraft have harrassed concentrations of landing ships in our amphibious operations.

To an increasing degree on each successive occasion, the critical phases of many important encounters have been turned in our favour by the presence of carrier-borne aircraft; on certain well-remembered occasions their absence has been disastrous. Each year of the War has made their presence more vital to the security of our sea routes, and has brought with it an increase in the power of the carriers to contribute to that security, come the threat whence it may.

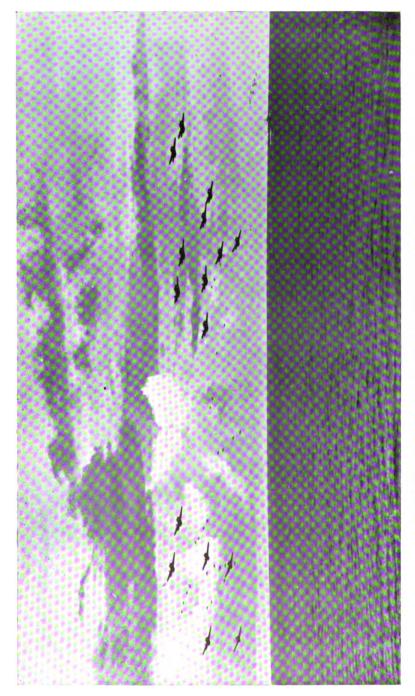
OUR CARRIER FLEET IN 1939.

The year 1989 found Great Britain with a Fleet whose carrier component was deficient both in relation to its own commitments, and by comparison with the carrier components of the other principal Naval Powers. The carriers themselves were in the main out-of-date, since, with the exception of our newest ship, the Ark Royal, and our smallest (and almost oldest) the Hermes, they had all been converted after the last war from other types of vessel. A replacement programme of new large carriers had been put in hand, but so far the Ark Royal alone of this programme had come into service. In design and equipment this fine ship embodied all the improvements which some ten years of carrier experience had taught our constructors; she was capable of operating some 60 aircraft, as compared with less than 50 in each of the three ships of the Courageous class, 18 in the Eagle, 12 in the Hermes, and about 15, depending on type, in the obsolete Argus. In the early part of the year the Ark Royal (Home Station), Glorious (Mediterranean), Eagle

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Barracuda aircraft setting off to attack German ships in Norway. (British official photograph. Crown copyright reserved.)



British Fleet aircraft setting off to attack Japanese in Sumatra. (British official photograph. Crown copyright reserved.)

(China), and Furious (training) were the only ships of the class in commission, the remainder being either in reserve or under refit. During the summer of 1939, however, the latter ships were brought forward with reserve crews for the practice mobilisation and large-scale exercises of the Fleet.

In the types of aircraft with which these ships were, in general, equipped we were also at a disadvantage. In this respect the Fleet Air Arm had rather fallen between two stools; the Navy had for 20 years been deprived of the effective responsibility for, and means of developing, those best suited to the special requirements of naval aviation; the Royal Air Force, which held the responsibility, was pre-occupied with the development of those for shore-based use, and also was out of fully-effective touch with the Navy's needs.

The disadvantage of divided responsibility was brought to an end by the Government decision in 1937 to transfer control to the Admiralty; but the types developed before this date were the only ones in service during the first year of the war. It is only now (1945) that we are beginning to feel the advantages of true naval-requirement developments in the aircraft coming into service. With few exceptions the types carried in our carriers, prior to the outbreak of war, compared in performance and general suitability for naval operations very unfavourably with those in the United States and Japanese navies. Among our fighters those embarked in one ship only (the Ark Royal) were of modern monoplane type, and they suffered the grave handicap to performance of being two-seat (single-engine) aircraft; they also had poor fire power compared with the contemporary fighters in other services. These aircraft, the Skuas, were the immediate successors to the old Hart-type Ospreys and Nimrods, which at the time of Munich were the only fighters the fleet possessed. Early in 1939, however, the critical situation demanded a stop-gap owing to prolonged delays in the supply of Skuas, and Gladiators were hurriedly converted for carrier use.

Apart from the Walrus, the catapult ship reconnaissance aircraft, which proved later to have good value for anti-submarine work in many theatres of war, only one other naval type of aircraft was in service, the redoubtable Swordfish. This aircraft had sterling qualities, including the capacity to carry a most surprising bomb load for its size, and with it many very notable and successful operations were carried out. But it was deplorably slow and poorly armed compared with the torpedo and dive-bomber types in the service of the United States and Japan.

Numerically our Air Arm at this period was undergoing a great expansion and very great increases in personnel were being made. During most of the earlier period of carrier force development Japan had been regarded as the principal potential enemy, and our general naval air policy may be said to have been the provision of air support for main fleet operations. Thus, although the Italian crisis of 1935 had given rise to some temporary changes in our naval outlook, nearly all Fleet construction, planning, and manning issues turned upon the calculated demands of an Eastern war and the challenge of the Japanese battle-fleet. The possibility, which became evident later, of a war with Germany and Italy simultaneously did not appreciably influence our programme for a considerable time, or deflect it from the concentration of effort in building up a powerful main fleet for operation in distant waters. That policy was, in fact, rather confirmed and supported by our naval pact with

Germany in 1936. No realisation of Hitler's fleet reconstruction programme really took place until very late in our own rebuilding programme; its seems, indeed, to have been only during the last two years before the outbreak of war that the menace of Japan was no longer considered to have a greater significance for us than any possible menace from Germany.

The direct consequence of all these circumstances was the tendency for the development of material and training in the Fleet Air Arm to be directed mainly towards the tactical functions of aircraft operating with the main battlefleet. One authority even expressed the opinion at this time that "the object of the Fleet Air Arm was to provide spotting for the guns of the Fleet." Guns were in fact the final argument in all naval action known and proved by the experience of the day, and the functions of fleet reconnaissance, action observation, fighter protection for ships and for spotting aircraft, and aircraft strikes against enemy carriers which might interfere, all aimed at holding the ring for the heavy guns; torpedo attacks aimed at hindering the enemy's escape from the guns.

Thus in an eastern war, with its overshadowing prospect of a mainfleet action, trade protection and convoy problems tended to lose their significance, and this tendency was increased by general geographical considerations which seemed to place our shipping in a war with Japan in a much less dangerous situation than in a war against a less likely enemy. Thus arose our apparent lack of preparedness in respect of the naval air arm, before 1939, for the intensive anti-shipping war subsequently waged by Germany; our carriers, carrier-borne aircraft, and aircrews were, in fact, in that year less suitable and less well-trained for the operations of wider scope and application which ensued, than for the specialised tactical requirements of fleet work.

There was another circumstance, however, besides the larger political events leading up to the actual outbreak of war, which had a direct bearing on the functions and training of carrier-borne aircraft. This was the assignment of a large part of the responsibility for anti-submarine and convoy protection duties to the Coastal Command of the Royal Air Force. On assumptions made at that time, it was held that the aircraft needed for the protection of shipping could be largely, if not entirely, provided from the shore bases of the R.A.F., and this surmise was a contributory reason for the concentration of carrier-borne air units on Fleet work.

The gradual extension of the field of submarine operations, changes in their tactics and weapons, the development of long-range air attacks on convoys, and the introduction of high-performance types of aircraft into the carrier field, are facts which have now caused a wide change of policy and method in almost all questions affecting the employment of aircraft in sea operations. From being, in the view of many, a doubtful asset and a serious liability in the early days of the war, carriers have even passed through the next stage, that of becoming an important adjunct to a fleet; they are now an entirely indispensable portion, and often the most important portion, of any considerable naval force.

OUTBREAK OF WAR.

Thanks to the summer mobilisation, September 3, 1939, found us with all our carriers in commission and capable of immediate employment. They were not all, however, equipped to their full capacity with operational squadrons, of which in respect of both men and aircraft, we were

very short. But as the only carrier possessed by Germany, the Graf Zeppelin, had not at that time reached a stage approaching completion, and since in those early days the Luftwaffe had not yet developed any very efficient striking force for ship attack, our weakness in carrier squadrons was not immediately felt. At the outset our carriers were disposed rather to meet blockade requirements than in persuance of any strategy based on air strengths. The general situation, with Italy and Japan still far from being in the war, demanded a concentration of naval strength in the Home and Atlantic areas. To this end the Eagle was recalled from the Far East and the Glorious from the Mediterranean. These ships, together with the Ark Royal, Furious (now raised to full commission, but with only a partial equipment of squadrons), Courageous and Hermes, in a somewhat similar condition, were made available for Fleet operations. The Argus, almost incredibly at sea again after more than ten years of total aerial inactivity, was sent to the South of France where, as those waters then offered good security against German air or submarine interference, based on Hyères, she continued Furious' former duty as training and deck-landing carrier.

Although Germany's very limited strength in capital ships did not make a fleet action in those early days a very real probability, there again existed (as in the last war) an obvious strategical necessity for our own main fleet to be concentrated at a Northern base, and this time for it to have a relatively large carrier force in attendance. In such circumstances it might appear that those Fleet carriers would have been forced to lead very unspectacular existence, as part of the "Fleet in Being." was not long, however, before the early naval activities of Admiral Raeder began to take shape and to make more interesting demands upon the employment of our carriers. These demands were not only in themselves very diverse in nature, but they also involved a wide dispersal of the ships

concerned.

The first of these activities of the enemy were, of course, his submarine attacks on merchant shipping as well as warships, and these began immediately war was declared. When, at almost the outset of this phase the Navy suffered two outstanding losses, namely, the torpedoing of the Royal Oak while at anchor in Scapa Flow, and the torpedoing of the Courageous while carrying out routine air patrols in the Western approaches of the Channel, the carriers were brought into their first impact with the U-boat arm of the enemy. In the North a dive-bombing attack against a surfaced submarine was made by two Skuas from the Ark Royal. U-boat escaped direct hits, and the aircraft were brought down (it is believed through pressing their attack too low and receiving damage from their own bomb bursts), and their crews were made prisoner by the U-boat. In the English Channel the loss of the Courageous taught us the lesson from which was developed the technique of handling carriers during landing-on operations to avoid exposing them to submarine attack.

Following shortly upon these casualties came the news that German "pocket battleships" were at large in the Atlantic. The immediate reaction of the Allied Command was the execution of a wide strategical dispersal plan for our heavy ships, on a system which was to reach its triumphant justification in the destruction of the Bismark some eighteen months later. The basic principle of this system was the division of the capital ships into small groups, each, when possible, accompanied by a carrier, and the dispatch of each group to a threatened focal area or possible

escape route. It was during one of these gigantically widespread operations, that in fact which terminated in the destruction of the Graf Spee, that the aircraft of the Ark Royal, which was operating with a group in the South Atlantic, tested for the first time in history the practicability of conducting, by means of carrier aircraft, the thorough and systematic search of a vast area of ocean. On this occasion 4½ million square miles were covered in 37 days. Though the gratification of finding the enemy ship did not fall to the lot of any of the Ark Royal's hard-worked searchers, that ship did in fact make a very positive and valuable contribution to her destruction by informing Admiral Harwood of certain definite limits to the Graf Spee's whereabouts.

During this period of the war the carriers attached to the main body of the Fleet were not without any opportunity for action. On many occasions German reconnaissance aircraft located the Fleet while it was carrying out its periodical sorties in Northern waters, and these contacts were sometimes followed by bombing attacks. It was after one of these that the enemy propaganda machine was brought into full blast to make the first of many claims that the Ark Royal had been bombed and sunk. The immediate promotion to the rank of Lieutenant of a German naval rating pilot for achieving this "immensely important success" rather indicates the degree of respect which this class of ship was commanding in the German minds at the time.

But, generally speaking, our carrier-borne fighters, at this period of the war, achieved little success in long-range "interceptions" of enemy bombing forces attacking the Fleet. Such interceptions were, in fact, rarely attempted until about mid-1940, when the ship-controlled direction of fighters had been fully developed by the Ark Royal and Illustrious in the Mediterranean. Moreover, the types of fighter which we possessed in 1939 and early 1940, namely, Skuas and Gladiators, were not even capable of sufficient speed to have a good chance of making successful attacks on the German bombers of the Junkers 87 and Heinkel 111 types used for such attacks at that time. They were completely outclassed by the Junkers 88's which were also much used in attacks on ships. The only German aircraft over which our Fleet fighters at that period had an effective speed superiority were the Dornier seaplanes which were used for long-range reconnaissance.

During this phase of the war it can broadly be said that our carriers and carrier-borne aircraft were still employed chiefly in the rôle of tactical support for our heavy surface forces in their action against enemy ships and submarines. Through lack, at this time, of any effective antisubmarine weapon for aircraft, and through lack of any opportunity to use the torpedo, this rôle then mainly took the forms of search, reconnaissance, and action spotting or observation; the most notable instance of the last-named to be achieved by Fleet Air Arm aircraft during 1989 (though actually by aircraft from a catapult ship) being at the river Plate action.

The lessons of this period seem to have been these. Owing to the weakness of our forces in Europe and, in the case of the Navy, a weakness mainly in the Air Arm and the other more specialised branches demanded by modern war for the support of a Fleet rather than any weakness in heavy ship force, Great Britain and France had little scope or power but for defensive action on any important scale. The German forces, on the other hand, first pre-occupied with Poland, and later, during the

"build-up" before their full deployment against us on land, in the air, and at sea, had an ample equipment of very modern material including aircraft; but these they had not yet tried against our own. As far as anything we were able to employ at sea was concerned, neither our material nor the training of our personnel had yet had much opportunity to demonstrate their suitability or otherwise for offensive action.

CHANGES IN OUTLOOK.

While the first seven months of the war proceeded there had been a steady but gradual increase in the pressure of Luftwaffe operations against shipping in British waters, both by direct attack with bombs and gunfire, and by mine-laying. But, for the reasons which have already been explained, the employment of carrier-borne aircraft had not varied greatly from those kinds of operation for which they had been specifically designed and their personnel had been trained, before the war. Carriers operating in the North Sea and English Channel would have been much more of a liability than an asset if an attempt had been made on a large scale to use them either to reinforce or to replace the air cover for our coastal shipping already supplied by the far more effective Hurricanes, Spitfires and other land-based fighters of the Royal Air Force. Certainly for some operations in these areas naval carrier aircraft were used, notably in mine-laying and, later, as part of the fighter defence at Dunkirk and in the attacks on the "invasion ports," in which Skuas, Albacores and Swordfish were the types principally used; but on such occasions the aircraft were operated from bases in the United Kingdom.

Three of the most important events of 1940, however, the invasion of Norway, the entry of Italy into the war, and the collaboration between Vichy France and Germany, produced immediate and farreaching reactions on the employment of a large proportion of our carrier forces. Though it is true that these changes, because they brought about direct contact between aircraft of the Royal Navy and the *Luftwaffe*, threw into high light the inferiority in performance of our existing carrier-borne fighters, they also gave occasion for showing the potentialities of aircraft carriers for inshore operations and for the protection of convoys. This period was to mark, in fact, the beginning of a new outlook in naval air warfare, and to show that the carrier might well become the principal

instrument in fulfilling some of the basic functions of sea power.

The arrival of German forces in Norway was a challenge to the employment of the Home Fleet carriers which was immediately accepted. Carrier-borne (Skua) dive-bombers, and (Swordfish) torpedo planes, attacked German ships and land targets in the Fjords, and the Fleet fighter aircraft were kept extremely busy in the protection of ships off the Norwegian coast from air attack. Ship-controlled interceptions, in their rather crude early form, began in this campaign to achieve their first successes, though their scope and chances of securing any good proportion of results were, of course, seriously limited by the relatively low performance of our fighters. But, nevertheless, German aircraft abounded in very large numbers and a high total score was actually reached by naval air arm fighters.

Carriers were also then used for the first time on an important scale for transporting Royal Air Force fighters to the vicinity of advanced operational bases. A remarkable achievement was the deck-landing on the deck of the Glorious by a squadron of Royal Air Force Hurricanes which had to be evacuated at the end of the Norwegian campaign, without the pilots having had any previous training or experience in deck-landing; the aircraft, moreover, had no arrestor hooks, but in spite of this there were no accidents of any kind. Tragically that ship was lost, with that gallant squadron still on board, when she was attacked by two heavy German warships on her homeward journey.

The German occupation of Norway gave to the *Luftwaffe* bases from which it could attack our fleet in northern waters, and even in its base. This led to the establishment of some naval fighter squadrons, disembarked from carriers, at shore bases in that area for fleet protection. From these bases sorties were also made by Skua dive-bombers to attack German ships in Norwegian waters. On one such occasion the German cruiser Koenigsberg was successfully attacked and sunk in Bergen. It is interesting that this naval aircraft (the Skua) was in fact the only dive-bomber, primarily designed as such, possessed by the British at this time, and it is believed that the Koenigsberg was the first warship ever sunk by this form of attack.

The entry of Italy into the war also brought our lack of good ship-borne fighters into unpleasant prominence. This development of course at once brought large British naval forces into the Mediterranean; this was vital, not only so that offensive operations against Italian military expeditions overseas could be begun, but also in order to provide cover for our valuable convoys through the Mediterranean to and from the East, and, in particular, while they passed through that narrow neck of water between Sicily and the North African coast which was later to become known as "bomb alley." Fortunately at the moment of the Italian declaration of war, a new fleet fighter, the Fairey Fulmar, which was faster and far better armed than the Skua, came into service and was brought to this theatre of war by the newly commissioned Illustrious when, about July, 1940, she joined the Mediterranean Fleet. The Ark Royal, still equipped with Skuas, also came into the area at this time.

In the first of their duties in the Mediterranean, that is to say, in the provision of fighter cover for shipping, the British carriers immediately began to pay good dividends. From Sicilian and Sardinian bases Italian bombers and torpedo planes commenced attacks on the Fleet and shipping at once, and these were continued at frequent intervals; but, thanks largely to the new aircraft, the use of radio-location, improved fighter-direction and the new technique of interceptions generally in the Illustrious

and Ark Royal, the Italians achieved relatively little success.

After the defection of France, the British naval Commander-in-Chief, Admiral Sir Andrew Cunningham, had no margin of strength over the naval forces of the enemy, except that provided by his own enterprise and offensive spirit; he was, in fact, so weak relatively in modern surface and air forces that, as he put it himself, attack was the only policy to pursue which could possibly succeed. Carriers were therefore used to the limits of their capacity for attacking the enemy fleet both at sea and in harbour, and the Swordfish torpedo bomber was the principal instrument. No one will forget the astonishing success of the torpedo attack in November, 1940, on the Italian Fleet in Taranto harbour by Swordfish aircraft from the Illustrious and Eagle, astonishing not only because of the results which they scored against modern warships in a defended harbour, but also because of the smallness of their losses. Other less important, but

successful, raids on Italian naval bases were made about this time also by carrier-borne aircraft.

During the latter half of 1940, certain unpleasant tasks falling to the Navy as a result of the fall of France and the measures which had to be taken to prevent French warships in African ports from being used against us, involved an extensive use of carriers for off-shore operations. At Oran, where British heavy ships bombarded the French Fleet in the naval base of Mers-el-kebir, and the gun defences, which retaliated, spotting aircraft with fighter escorts were provided by the Ark Royal. On this occasion the French Dewoitine fighters showed their very considerable superiority in performance over our Skuas, but in the strange and probably unprecedented circumstances of the event all the air manœuvres of dogfighting took place between the British and French fighters, but the latter did not press home their advantage in attack with gunfire, and apart from one or two isolated incidents there were no casualties from this cause. Anti-aircraft fire from the shore batteries and ships did cause some losses amongst our naval aircrews. Torpedo and bombing attacks were also carried out against the French battleship Strasbourg while she was making good her escape to Toulon, but, though hits were obtained, the Swordfish making them were unsuccessful in stopping the ship, and suffered casualties from anti-aircraft fire. During the much longer and more complicated operations at Dakar our carrier aircraft were used more offensively (the Richelieu being the principal naval target), and the French fighters in this area took a very active part and shot down many of our own.

The outstanding lesson of all the operations of this period was the need for us to provide at all costs a more efficient fighter. The Royal Air Force had such a commodity—could the Navy use them (a) by adapting them mechanically for carrier work, and (b) by abandoning an old article of faith which stated that a fighter at sea was useless without an observer to navigate it? The United States Navy had already proved with their Wildcat, which had just then come into production, and a number of which were already on order for the French Navy, that a very good decklanding aircraft could also have a very good fighter performance; and they had proved also that fighters of good range could be effectively navigated by their pilots without the help of a second member of the aircrew. The immediate solution for the problem with which the naval air arm was faced was, therefore, sought by following two lines, first by the purchase of the fighters of American manufacture originally designated for the French (which in our service became the Martlet); secondly by converting Hurricanes to naval use by the addition of an arrestor hook and some strengthening. It had already been proved, in the Glorious, that they could be safely landed on the deck of a carrier. These two new types of aircraft were to come into service with the Royal Navy in September, 1940, and March, 1941, respectively.

A further feature of particular interest in the history of carrier development which made its appearance during 1940 was the use of armour protection for flight decks. The Illustrious and ships of her class were so provided, and it is perhaps of special interest to note that these ships were in fact designed at the time of the Abyssinian crisis, and the provision of this armour was mainly introduced to meet the possible necessity for those ships to operate in the Mediterranean within close range of Italian

shore-based bombers.

INCREASING IMPORTANCE OF CARRIERS.

During the year 1941 the German challenge to British sea power was considerably intensified in the Mediterranean and North Atlantic. In the first days of the year it became clear that the German High Comman was anxious about the capacity of her Axis ally Italy to hold out. The Italian army was failing against the Greeks, and it was also not succeeding in fulfilling its rôle by the invasion of Egypt, and the severance of Britain's most vital line of communication through the Suez Canal. On the sea (Mare Nostrum) the British Fleet was being uncomfortably successful despite its "paper" inferiority. Taranto, not to mention other lesser actions, had shown this, and the Italian Air Force had, contrary to all previous calculations, entirely failed to limit the activities of that Fleet or to interrupt the flow of British shipping. Even Malta was showing no signs of breaking down under air raids and the "siege." On the contrary, the Italian people, severely shaken by the extent of their own losses in warships and by the number of prisoners taken by the British Army in Libya, and not a little discomforted by British air raids on the mainland of Italy, were losing morale and were in need of stiffening.

It must undoubtedly have been clear to the German Command that one of the major factors in the generally unfavourable results at sea was the growing success of the British carriers. And now, evidently realising that the Middle East was a key point in the whole strategical picture and that the Italian forces were rapidly losing their hold on the situation there at every point, rapid moves were made by the German Army and the Luftwaffe to readjust the balance. These moves began with the establishment of powerful German bomber and fighter forces in Sicily and Southern Italy, and with the German campaign for the occupation of Greece and Crete, both moves being a necessary prelude to the build-up of a German military force in Libya for the execution of the plan in which the Italian Army had failed. The project included the elimination of the British Mediterranean Fleet, beginning with the aircraft carriers.

The immediate effect of these moves was a critical step-up in the burden placed upon our carriers in the Mediterranean, and upon the defenders of Malta. From now on every convoy had to fight its way through "bomb alley," and all naval forces at sea were, as soon as they reached the waters within effective range of the southern Italian air bases, challenged by the Luftwaffe on a scale hitherto unknown in the Mediterranean. This threat increased as German land forces occupied more territory on both shores of the Mediterranean as the year advanced, and the position of Egypt as well as Malta became more precarious. Although ever since Italy had entered the war the danger from submarines, mines and aircraft had been a serious menace to shipping in the neighbourhood of Malta, the real siege of the island cannot be said to have begun until January, 1941, when the Luftwaffe arrived in Sicily. From that date until the fall of Rommel in Tunisia in May, 1943, no Allied convoy was able to pass through the central Mediterranean without being subjected to powerful and almost continuous air attacks.

To meet this challenge the Illustrious, now our largest carrier in the Eastern Mediterranean, began at once to develop a fine technique in fighter interceptions, making the fullest use of the improved performance

and fire-power of her new fighters, the Fulmars, and gaining a high score. These successes inspired the view that the gauntlet to Malta could and must be run, and that our forces farther East could also be supplied by occasional convoys from Gibraltar (a so much more economical proposition than the alternative Cape route) in spite of the worst that the Luftwaffe

could apparently do.

During the very first month, however, the Illustrious, while escorting a very important military convoy, bound eastward through the Malta Channel for Greece, suffered several serious bomb hits and near misses during a dive-bombing attack, and was put out of action. She managed to reach Malta dockyard, but during the ensuing three weeks while temporary repairs were being made she was the target of further incessant and merciless attacks by the Luftwaffe from Sicily. Miraculously, and with characteristic fortitude, the Malta defences, reinforced by the Illustrious' own guns, saved her from total disablement, and she successfully evaded further attempts by the enemy to sink her when she finally made her departure and safely reached Alexandria for further repairs. She was soon afterwards replaced by a newer ship, the Formidable.

At this time also, attacks on Malta itself became almost incessant. A very small number of fighters (three Gladiators borrowed from the Navy in fact) were available in the early days of this siege but these were successful in deterring the Italian Air Force from pressing home their attacks too strongly. In spite, however, of the most careful nursing (if such circumstances could ever be described as constituting nursing) these became two; and finally they were no more. The Luftwaffe was not as easily deterred as the Regia Aeronautica, and reinforcements became vital. In early 1941 no fighters could fly direct to Malta from our nearest air base, Gibraltar, though, later in the year, Hurricanes with long-range tanks but no ammunition could just "make it." But by that time the superior performance of the Spitfire made that fighter,

in turn, an indispensable factor in Malta defence.

Thus the ferrying of fighters to Malta became a further new rôle for aircraft carriers; the Eagle, Argus and Furious were amongst those most frequently so employed. Such ferrying expeditions became operations of major importance, and Admiral Somerville's famous Force "H" (the Western Mediterranean Fleet) which at that time included the Ark Royal, was often employed as covering force for them. The practice was for the ferrying carrier, loaded to capacity with fully-serviceable fighters, to be escorted as far to the eastward toward Malta as would allow her cargoes, once flown off, a normal probability of reaching the Island, without risking the ferrying ships any more than was necessary in the bombing zone. The fighters were flown by Royal Air Force pilots, entirely, as a rule, unaccustomed to carrier work; but for take-off this did not present a great problem. The distance, however, for them to fly could not, for various reasons, be made very great, and the last part of the convoy's passage to the flying-off point was usually made fairly lively. For many months these ferrying sorties were the only means of sustaining the life of Malta's air defence. It was during one such "reinforcing "operation in 1942 that the Eagle was lost. It is of interest that, in all, nearly 750 fighters (all R.A.F.) were so ferried.

From this time on, the aircraft of the naval air arm in the Mediterranean warmed up to their work in accepting the challenge of some of the best German bombers, supported as they often were by some of the best

German fighters. As the campaign in Greece developed, the strain on the carriers in the Eastern Mediterranean became greater, for not only the ship-borne (and therefore handicapped) fighters, but also the Albacores and hardy old Swordfish, were pitted against these land-based aircraft. Many of them were, in fact, operated from land bases in Malta, Greece, Crete and Egypt, for various reasons which included the sinking or damage to their own parent ships. Our losses in naval aircraft were,

therefore, relatively heavy.

But this did not in any way diminish the ability and readiness of the carriers to play their more traditional rôle of Fleet support. It was vital that the Italian Fleet should not be allowed to interfere with our Greek operations. Moreover, although Taranto had severely weakened the Italian battleship force, some of the latter's ships damaged there had been repaired, some had not been damaged, and some had not been there The action off Cape Matapan in March, 1941, was the outcome of that policy, and it can truly be said that the completeness of that great victory provided the most striking proof that aircraft from a carrier can "fix" the enemy by reducing his speed while the battlefleet which they accompany is able to overtake him. In this new form of an old naval tactical method, the action off Matapan was a forerunner of the equally important Bismark operation in the Atlantic.

For co-operation in the land operations in Greece and Crete only one carrier, the Formidable, with a desperately small number of fighters remaining to her, was available. But she was so overwhelmed that the success of her withdrawal to Alexandria a few days later with serious hull damage and only one remaining fighter, was providential. Illustrious was under repair, and the very limited total of British carriers remaining for fleet and convoy duties all over the world forbid the use of a concentration in Greek waters. To have used a single carrier for close support would have certainly been suicidal; some expert opinion even, at that time, held that a relatively large force of carriers could not have hoped to survive operations of anything but the shortest duration in the immediate neighbourhood of enemy bomber bases. At the time of writing this is now no longer considered impossible. The presence of carriers in anything like the numbers which operated during the landing operations in the Mediterranean in 1943 and 1944 would almost certainly have averted the catastrophe of Crete.

These events were recording the march of progress in modern fighting technique and its inevitable influence on the tempo and nature of naval operations; and they were adding a great weight of evidence to the case for a general readjustment in the balance between the different types of heavy and medium vessels figuring in our naval construction programme. Carriers were becoming, in fact, as important as capital ships; or shall we say they were already a class of capital ship of which it would now seem that the number to be provided would have to be somewhere nearly the same as the number of heavily-gunned ships. The absence of an earlier recognition of this fact is perhaps best illustrated by the dates of commissioning of new fleet carriers during the war, which are approximately as follows:-

Illustrious . . May 1940 Indomitable. . Sept. 1941

Formidable . . Nov. 1940 Indefatigable . 1944 Victorious . . May 1941 Implacable . . 1944 During the gap of nearly three years the United States Fleet added very considerably to its carrier force of ships of similar capacity to the British fleet carriers; British additions were limited to converted merchant vessels of relatively very small capacity and low speed, a fact which almost entirely precluded their being used in tactical conjunction with capital ships. The Unicorn, which came into commission early in 1948, was designed as an aircraft repair and supply ship; but, having a good flight deck, she was in fact used in coastal operations during that year for lack of sufficient numbers of carriers of operational types.

THE ATLANTIC WAR.

In the North Atlantic the development of air and submarine bases by the Germans in France and Norway, and the use of the anchorages on those coasts by German heavy ship raiders, constituted the means of applying a very heavy pressure on all our North Atlantic shipping. Besides the use of surface raiders, in both warship and merchant-ship form, the technique of U-boat warfare was progressing, and the demand for escorts of long endurance and of good sea-keeping qualities became very heavy. German long-range aircraft were also lending a hand to the U-boats in their attacks on Atlantic convoys, both by reconnaissance and shadowing, and also by bombing attacks. A typical instance of this co-ordinated effort was that of the Empress of Britain, which was bombed and set on fire by a Focke-Wulf, and, thus crippled and made into a flaming torch, fell an easy prey to a U-boat during the night which followed. To increase our difficulties, the southern and western naval bases in the United Kingdom were subject to frequent and heavy air attack, and this made them unsuitable for operational use by the larger escort ships.

The ocean traffic first to suffer on a large scale from the combined aircraft and submarine operations of the enemy were the United Kingdom-Gibraltar convoys, and those Cape and West Africa-bound convoys and singly-sailing ships which had to pass near the Spanish and Portuguese coasts. The entry of Russia into the war brought a new traffic route, that of the North Russian convoys from Canadian and American ports, into operation; and this also became gravely menaced by aircraft working in conjunction with U-boats, the former operating from bases near the North Cape. Even in the North Western Approaches, and to the west of Ireland, the Focke-Wulf had a very serious bombing nuisance value as well as being instrumental in directing U-boats on to the tracks of both

east- and west-bound convoys in those waters.

Aircraft carriers were not employed on convoy escort work during the first two years of the war, except when troop convoys of particular importance (as, for example, when the First Canadian Army came across the Atlantic) were regarded as liable to large-scale air or submarine attack. When, during 1941, losses of shipping in convoy from air as well as submarine attack became very serious, it was decided that, since fleet carriers could not be spared for convoy protection, and since the air escorts of Coastal Command were unable to afford any practical protection against this new menace, special carriers for escort work must be provided at the earlier possible moment.

The first of the Escort Carriers, then called Auxiliary Aircraft Carriers, was the Audacity, the ex-German diesel-driven merchant ship Hannover, which had been captured in the West Indies. This ship was converted

into a carrier by the relatively simple process of adding a flight deck to her superstructure. She had no hangar and no lift, her total complement of aircraft consisting of six or eight of the newly-purchased Grumman Martlet fighters which had to remain parked on deck when not actually in the air. She first appeared on service about September, 1941, with Gibraltar convoys, and immediately began to pay dividends, a result which these American fighter aircraft made possible to a higher degree than would their less suitable British naval counterparts have done. The Martlet was the only one-hundred-per-cent carrier fighter in our service, and, besides being designed to withstand the stresses of decklanding in all weathers, it carried guns of larger calibre and, therefore, more suitable for the attack of the large German long-range aircraft than any British fighter afloat, and had some 40 to 50 knots better speed than the Fulmar, our fastest hitherto.

The Audacity's aircraft, during the only four convoy escort duties which she ever carried out, shot down five Focke-Wulf Condors, with other possibles, and by reconnaissance patrols (for which, owing to their good endurance they were better suited than most British naval fighters) contributed to the sinking of several submarines. This most successful ship met her end at the hands of a U-boat in November, 1941, but by that time the experiment had proved the immense value of this class of ship.

During 1941 two other types of ship had been employed to help combat the growing menace to convoys, pending the completion of the Audacity's conversion and trial. A number of merchant ships, whose design was suitable, were fitted with catapults on their forecastles, from which Hurricane or Fulmar fighters could be projected into flight. These were, of course, only one-shot aircraft, that is to say, that, once launched, they could not return to their parent ships. After fulfilling their missions they had either to fly to any nearby friendly land base, to "ditch," or to "bale out."

The scheme was uneconomical, of course, in aircraft, for though pilots were nearly always saved after ditching and some aircraft did in fact safely reach land bases, many aircraft were expended for no visible gain. The problem in economy which the use of this method presented is well illustrated by one incident in which the catapulted Hurricane had made a difficult but successful interception, and was about to shoot down his quarry which was then comfortably in his gunsight. But at that instant his prize was snatched from him by a lucky shot from an anti-aircraft gun in one of the ships of the convoy. These fighters, however, did justify their existence; they had a deterrent effect, especially on "lone" enemy aircraft; they sometimes scored successes; and their flights always inspired the convoys to which they were attached with a feeling of better security.

A few seaplane- (Walrus) carrying ships were also used for escort work, amongst such ships being the veteran Pegasus, who did service for many years—which included some in the last war—bearing the name of Ark Royal. Aircraft from these ships, like those in the cruisers and battleships also occasionally used in the earlier days of this war with convoys, were, of course, only suitable for anti-submarine duties and not for defence against enemy aircraft.

ESCORT CARRIERS.

The success of the Audacity was followed by an immediate order British yards were already filled to capacity with for more such ships. new construction, and the entire shipbuilding trade already conscripted for war work. It was, therefore, impossible for more than a few conversions of existing British merchant vessels to be made in British yards. The construction of a special class of Escort Carriers, de novo, was entirely out of the question, from both material and time points of view. Obviously many more than the few which could be converted in British yards The Admiralty, therefore, requested the United States Government to provide and convert American merchant ship hulls for this purpose; a class of ship known as the "C3" hull were at that time under construction on a very large scale for the American Merchant Marine, under the auspices of the United States Maritime Commission, and these were considered to be the most suitable available. Throughout 1942, therefore, these ships were being pushed ahead and many were actually brought into service with the Royal Navy during that year. After Pearl Harbour, and in the light of British experience with convoys, the United States Navy also ordered a large number.

Concurrently with this construction, the naval air arm itself had of course to expand rapidly in order to create sufficient numbers of new squadrons to equip these ships, and by no means easy was the problem of manning the ships. They must obviously be fighting ships and they must be officered by naval operational staffs. On the other hand, serious shortages of trained seamen already existed owing to all the other kinds of expansion which were taking place and so it was decided as a special expedient to make use of men of the Merchant Navy to man the machinery

and domestic departments of the new class of carriers.

As carriers, these ships were given the very latest aviation, radio, navigation, and gun equipment. They were required to operate antisubmarine patrol as well as fighter aircraft, and these also had, of course, to be the best available. During 1941 and the first half of 1942 Swordfish aircraft were still the most efficient British naval bomber and patrol type of carrier aircraft; Sea Hurricanes, which came into naval service in March, 1941, were our best fighters. But, under Lend Lease, large numbers of Grumman fighters, Martlets (U.S. Navy Wildcats), which, as had been proved in the Audacity, were eminently suitable for small carrier work, were becoming available.

Thus the earlier Escort Carriers (as these ships were called at the end of 1942) were equipped with Hurricane or Martlet fighters and Swordfish torpedo bombers. Amongst the first of the class were the Avenger, Archer, Biter, and Dasher, which were diesel-driven ships, and these all came into service during the summer of 1942; the first British-built ships of the type, which came into service a little later, included the Activity, Vindex, and Pretoria Castle. They had many early successes, very notable amongst which was the escort of a most important convoy of supplies to Russia in the summer of 1942. In this operation the Avenger held the honour of being the first ship of the class to come into combat with large formations of enemy aircraft, off the Northern Norwegian coast. Her Swordfish made no less than sixteen submarine sightings, and her Hurricanes battled for three days, with hardly a break, against formations of thirty or more enemy bombers at a time. Her success as an

obstacle to the German attacks was immediately apparent, and the German air and submarine forces withdrew and made no further attacks while she was present. The Biter and Archer scored some early successes against submarines with transatlantic convoys. These ships were also found most useful in the large-scale landing operations undertaken on the French North African coast in November, 1942.

During 1940 and 1941 the Allied surface escorts, with their gradually mounting strength, operated to a continually increasing extent in conjunction with shore-based patrol aircraft and were steadily gaining in effectiveness against the U-boats. But there was a very definite zone near the centre of the North Atlantic where this effective co-operation was bound to fail, owing to the limited range of aircraft operating from bases on either side of the ocean. This zone came to be called the "Gap," and, owing to fog and other bad weather conditions, it was probably at its worst and widest near the area of the Newfoundland banks. this gap the U-boat "wolf packs" were to be found, and, by the use of patrol lines and a highly-developed system of intelligence and communications for the concentration of their forces at any given point, they were able to play considerable havoc with all the slower convoys passing through it. A pack would attack an eastbound convoy for, say, three days, until it reached the western limit of the Coastal Command air patrols, then it would disperse and await the next westbound convoy to come The advent of the escort carrier closed the gap. the increasing number of these ships during the latter part of 1942 many convoys were given effective air cover throughout their passages, both east and west, across the ocean, and the sinkings immediately began to diminish.

It was natural that the use of a special class of carrier for convoy escort work should be followed by the development of special technique in the use of their aircraft. As more ships of the class came into service, moreover, improved aircraft were also becoming available, notably the Seafire, which is the naval version of the Spitfire, and the Grumman Avenger torpedo-bomber. Under this pressure enemy U-boat packs were often unable to achieve their concentrations, and their attacks soon became innocuous. The aircraft found and held the location of each submarine, while those wonderfully efficient corvettes and other escort ships had time to come to the reported area and secure their "kill." The Atlantic and southbound convoys also benefited greatly when escort carriers were present, since they were then rarely molested, or even shadowed, by the German long-range reconnaissance or bomber aircraft.

During 1943, in the Western Approaches Command, this submarine war was carried into the enemy's camp. Hunting groups were formed, some of which consisted of one or more escort carriers, accompanied by destroyers or other surface escort vessels, for the sole purpose of taking the direct offensive against submarine packs. These groups were very successful and the packs themselves became the hunted; before many months submarines to kill were actually in demand!

Owing to the very large number of convoys which had to sail monthly through the dangerous waters of the North Atlantic, for every one of which it was manifestly not going to be possible to provide an escort carrier, aircraft for anti-submarine work have been provided by yet another type of ship—the "M.A.C. ship." These vessels are in fact, as their full title, Merchant Aircraft Carriers, implies a combination of escort

carrier and cargo-carrying ship; one of the objects of the policy of using them was to limit the loss of potential cargo space which the construction of escort carriers inevitably involved. Oil tankers and grain ships were the most suitable classes for conversion, because owing to the liquid nature of their cargoes neither derricks nor large hatches presented a problem where the provision of a flight deck was concerned. They carried, as a rule, Swordfish aircraft, which are the only type suitable for such small decks; and they were manned by their normal Merchant Navy captains, officers and crews, the only naval personnel carried being those directly concerned with the operation of aircraft and communications. They provided the the sole local air cover for a very large number of trans-Atlantic convoys after they first came into service in May, 1943; and though they actually had the opportunity for delivering only three attacks on U-boats, their presence undoubtedly gave most favourable results in providing security for convovs.

About this time new equipment was also being developed, and a very important new weapon appeared, the rocket projectile. This could be used by aircraft with deadly effect against submarines; Swordfish and Avengers could carry a sufficient number each to sink a submerged U-boat. Because, however, of the particular type of attack needed for use with the rocket, the U-boats found that they could retaliate with their shortrange anti-aircraft guns and they were at first inclined to fight it out on the surface, a method which they had found very successful in dealing with depth-charge attacks by Swordfish. The Navy, therefore, began to use fighter aircraft in all such attacks to drive the Germans from their guns and, if possible, force them to dive at the moment before the beginning of the rocket attack.

From the middle of 1943, during one month of which there was an average "bag" of U-boats of one per day, the submarine menace gradually diminished. In September, 1944, an official statement was made that during the preceding four months no Allied merchant vessels of any kind had been lost in the North Atlantic through enemy action.

FLEET WORK AND CARRIER OPERATIONS AGAINST ENEMY SURFACE SHIPS.

The growing importance of aircraft carriers in Fleet operations had already begun to prove itself, as for example, in the chase of the Graf Spee, in the operations against the French Fleet, and at the Battle of Cape Matapan. During the year 1941 many attempts were made by German heavy ships to raid convoys in the Atlantic, and these operations were as a rule conducted by the raider taking his departure from a Norwegian harbour, proceeding westwards to the north or south of Iceland, intercepting and attempting to attack a convoy in a westerly longitude, and then making a bolt for Brest or one of the other Atlantic ports of France. Hue and cry was, of course, raised with the first attack, if not earlier; and thereafter it was a race between the raider and the British heavyship hunting groups (each with its carrier, if one was available) for the "bolt hole" in France. Shore-based aircraft are generally the most suitable for maintaining a watch on the Norwegian harbours and, when weather permits, for shadowing until British fleet units can get within a hundred miles or so of the quarry.

In May, 1941, when the Bismark attempted such a raid she appears to have varied her plan to some extent from the former practice of German

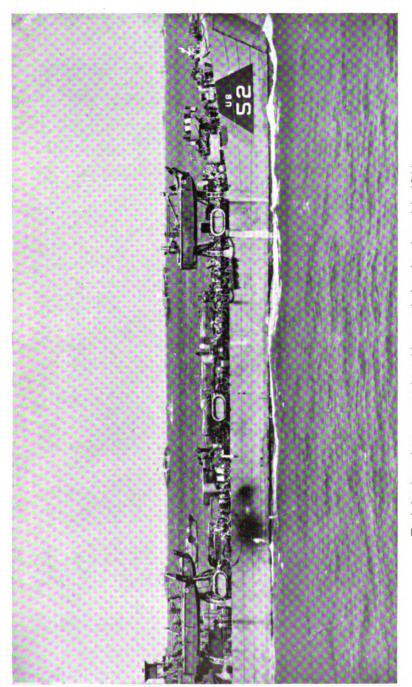
heavy ships, in that a large number of supply ships had already left Axis ports, evidently to support her in her ocean operations; this plan might well have been difficult to cope with, as an early withdrawal to Brest would probably not have been undertaken. The Bismark reached the Denmark Strait, having been shadowed by cruisers and shore-based aircraft, before the first carrier aircraft (from Victorious) made contact with her and the first heavy-ship group (Prince of Wales and Hood) came within reach. Swordfish, in the foulest weather (and at night) made a desperate attempt to attack with torpedoes, and one hit is believed to have been scored. The weather was, however, too foul to continue shadowing, especially in view of the very limited number of aircraft available. Later, contact was regained and an attack was made by Swordfish from Ark Royal, which had come North from Gibraltar with Force "H." In this attack the Bismark was so badly crippled by three torpedo hits that she fell an easy victim to the gun and torpedo fire of the surface ships of the Home Fleet, who were thus enabled to intercept her as she attempted to reach Brest.

The entry of Japan into the war in December, 1941, immediately brought the importance of carriers into further prominence, possibly even, in this theatre of war, into the highest place amongst the major units of a fleet. The Japanese had, on the face of it, appreciated to a far greater degree than ourselves the potential value of this class of ship. They knew that their first stroke of the war, the crippling in one hour's action of the whole of the United States Pacific battlefleet, could have been carried out in no other way. Even had a treacherous breach of the peace not been an essential feature of the plan, neither the completeness of the surprise nor the swiftness of the blow could have been achieved without the use of carrier-borne aircraft.

When, three days later, the Prince of Wales and Repulse were sunk off the east coast of Malaya, the success for Japanese aircraft (though not carrier-borne) was again achieved with the greatest economy of effort and the minimum of loss to themselves, because the British ships were not accompanied by a carrier or other fighter escort. British authorities had not even then realised the helplessness of the most powerful capital ships with no air cover, when faced by a determined enemy who possessed an air striking force. The sinking of the Dorsetshire and Cornwall to the south of Ceylon on April 9, 1942, and of the Hermes (with no aircraft on board) on the following day, by a sortie of Japanese carriers into the Indian Ocean, was further tragic proof of the superior appreciation by the Japanese, at the very outset of their participation in the war, of the offensive powers of carriers in fleet operations.

Ironically, during the same year, on one occasion, the boot was on the other leg, and a small group of German ships (Scharnhorst, Gneisenau, and Prinz Eugen) making a dash for their home bases from Brest, had to pass within less than a score of miles of the British coast and within the reach of hundreds of British bombers. But the damage done to the ships was relatively small, and they escaped into the North Sea and home, because they had provided themselves with fighter cover on a sufficiently lavish scale.

In May of 1942 two very vital fleet actions were fought out between United States and Japanese forces. In the first, the Coral Sea Battle, a Japanese military expedition of the largest scale on its way into Australian waters was frustrated in its object through the interception of its fleet



Tank landing ships approaching Normandy beaches June 6th, 1944. (British official photograph. Crown copyright reserved.)



An American tank landing craft, armed with rockets, in action just before a landing. (U.S. official Navy photograph.)

covering force by an American naval force which included fleet earriers. The action was decisive (though the United States fleet lost one of its largest carriers, the Lexington), and will go down to history as the first large-scale naval battle in which carriers on both sides took part. This was to be followed in a few days by another sea action, an example of modern naval warfare in excelsis, in which major ships of all types were represented on both sides, but in which the heavy guns never got within firing range of each other. Yet the action was an even more decisive one. This smashing victory for the United States Fleet, in fact, cost the Japanese four large aircraft carriers as well as other ships, and entirely defeated them in their object of capturing Midway Island. 'These were the first of a series of naval actions in which the Japanese fleet was gradually reduced to impotence, and this was mainly achieved through the systematic elimination of its aircraft carriers.

The Japanese onslaught in the Pacific, which developed after Pearl Harbour, was brought to a final standstill at its most advanced outpost, Guadalcanal, because of one very important incident at the time of the Pearl Harbour attack, which gave the American Fleet in the Pacific time to reform and recover its poise. This incident was the absence of the United States aircraft carriers from Pearl Harbour when the blow fell. This was purely accidental, and was not due, as one might surmise, to an inherently acute awareness of probable war conditions by members of the American naval air branch, amongst whom was, of course, the Flag Officer commanding the carrier force in question. But there is no doubt that it was that awareness which had placed American naval aviation well in the lead, as compared with our own, both in the numbers and capacity of their carriers and in the suitability of their aircraft for carrier operations. Nor is there any doubt that their very high appreciation, for many years past, of the scale of air work demanded by modern war, has been the main factor in their ability to make such rapid and wonderful progress against Japan.

Before leaving the subject of fleet carrier operations which, in so far as the Axis navies in Europe were concerned, came to an end with the Battle of Matapan in the Mediterranean and the Bismark action in the Atlantic, mention must be made of the use of carriers in attacking naval targets on enemy coasts. From the early days of 1940 many such operations have been carried out and they have consisted mainly of carrier-borne "strikes," combined with naval covering operations to protect the carriers themselves from attack during the air operation.

The attacks on Bergen and other Norwegian ports during the German invasion, on Taranto, Tobruk, Sicily, and other Italian-held bases, have already been referred to. During the early part of 1944, when more carriers were available and newer types of carrier aircraft had come into service, namely the Barracuda (torpedo-reconnaissance-dive bomber), and the Hellcat, Corsair and Firefly fighters, such "strikes" were pressed home more frequently, and certain special targets, the Tirpitz, for example, were selected.

The attack on the Tirpitz is a very good example of this type of operation, involving as it did a long sea approach and the availability of smoke screening and radio-location, as well as "flak," to the defenders. The plan included the provision of a main striking force of Barracudas, supported by their own air cover, of course, and of fighters for "shooting up" both ships and shore "flak," at the moment of the attack. Cover

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for the carriers themselves was also provided in case of interference during the operation by German aircraft. Surprise was achieved and the attack was a complete success, with extremely little loss to ourselves. The ship was totally disabled for many months.

The operation is of special interest in regard to the use for the first time of Barracuda aircraft for dive bombing, and in this respect their effectiveness and accuracy as dive bombers was proved. Furthermore, in spite of the fact that this was a daylight operation and that the Germans undoubtedly had radio-location, it speaks a great deal for the tactical handling of the large formations of aircraft taking part, that such complete surprise was achieved.

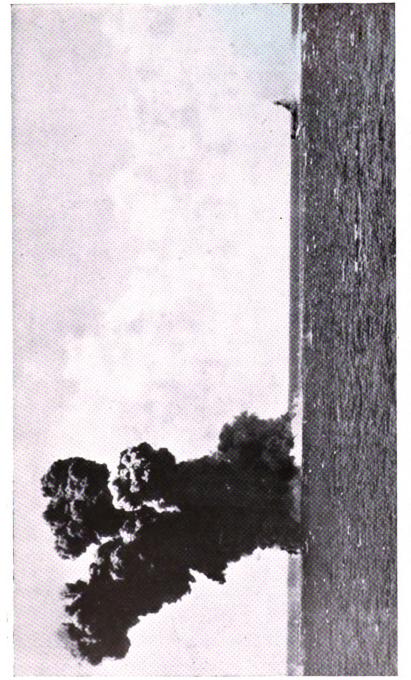
Many other coastal operations on somewhat similar lines, but with less spectacular results, have been carried out, and they have taught us that operations of this type can be developed to a large scale of importance; that they can be prolonged over a long period as a deterrent to coastal shipping activity; that they can be carried out at very considerable distances from the bases of the country making the attack; and that they lie within the capacity of any naval power which possesses aircraft carriers and local command of the sea, with relatively little loss to the attacking forces.

CARRIERS IN AMPHIBIOUS OPERATIONS.

The first important examples of this type of operation in European waters were those carried out against a relatively small scale of opposition during the occupation of Madagascar and, later, of French North Africa. The principal features of such operations, from the carrier point of view, during that period, were the provision of air cover for the naval force and landing ships and for the Army when disembarked, of spotting aircraft for bombardment, of aircraft for bombing and straffing enemy airfields, and of general reconnaissance. In addition to this there was, of course, the need for anti-submarine patrols for the convoy while approaching its destination and in the immediate neighbourhood of the landings, and, on occasions, for the ferrying of fighter aircraft required for early disembarkation as tactical air support for the military forces.

Until the summer of 1943, however, no special equipment or preparation was devoted to this kind of carrier duty, as it was considered to come within the repertoire of any efficient carrier fighter and bomber squadrons. The operational problem, in fact, presented no great difficulty provided that the degree of tactical co-operation demanded was not too advanced and was limited to the functions described above. The provision of bombing also for strategical targets could be carried out on a limited scale, but naval torpedo bombers are not suitable for tactical ground attack.

About that time it began to be felt that if an amphibious operation were staged to take place on a coast which was too far from friendly land bases for the tactical air cover and support required by the army once landed to be provided by the Royal Air Force, carrier-borne aircraft could provide that cover and support if they were specially equipped and their aircrews and operational staffs were specially trained. During the three years of campaign in Africa and Italy, the Eighth Army and the Desert Air Force developed a very high degree of tactical co-operation which grew into the perfected system now employed by the Tactical Air



Japanese ship, attempting to escape from Truk, sunk by an American battleship. $^{(U.S.\ official\ Navy\ photograph.)}$



Admiral Doenitz, Commander-in-Chief of German Navy. Captured German photograph.

Forces. The value of Army formations and weapons is evidently greatly enhanced by the full use of this technique, and it is obviously most desirable that its advantages should not be absent during amphibious operations, which are well known to be among the most exacting of all forms of military assault.

It has now come to be recognised as a part of the Navy's duty to supply the tactical air support required in these circumstances; special carrier-borne squadrons have, therefore, been trained for assault work. From the material point of view this is not difficult. Escort carriers, of which large numbers are available, are entirely suitable for the operation of the correct types of aircraft; fighters of a suitable type are, in fact, already employed in these ships for ordinary naval fighter duties. All that is

needed is specialised training and the time in which to give it.

During the preparation of plans for the invasion of Italy, the need for a large-scale landing operation on the west coast somewhere near Naples, was very apparent; but its execution could not be achieved without a considerable and highly-efficient fighter force to provide continuous daylight cover. The most suitable beaches were too far North of Sicily (then in Allied hands) for single-engine land-based fighters to be used. The whole project, therefore, depended in the first place upon the minimum acceptable scale of fighter cover being provided by carriers, and it was decided to go ahead if that could be done, even though the other forms of tactical air support could not then be provided in that way.

The Unicorn and four escort carriers, Hunter, Stalker, Battler, and Attacker, were, therefore, equipped with Seafires and, thus forming under the command of Rear Admiral Sir Philip Vian, the first Assault Carrier Force (appropriately named Force "V"), were attached to the invading forces. A battle squadron with two fleet carriers was provided as naval cover for this air assault force. The landings began on September 7, 1943, at Salerno, and were, after many days of the most anxious and arduous fighting in the beach area, completely successful in establishing a firm foothold.

A large force of Junkers 88 bombers supported by Focke-Wulf 190 fighters and other aircraft were known to have been available for the defence of the area; but, apart from isolated tip-and-run bombing attacks by small groups or single aircraft by day, and small-scale night attacks of all kinds against the assault vessels and the naval covering forces, all of which were very difficult to prevent entirely, it was clear that the Seafire force was able to establish local air superiority. This fact was indeed admitted in the official German report. This important experiment marked another stage in the development of carrier warfare, and was a further example of the value of command of the sea.

Operations somewhat similar in nature were carried out during the same year by United States naval and military forces in the course of their island warfare in the Pacific. No landing operations of any kind, in fact, could have been carried out by the American forces against Japanese-held territory had it not been for the existence of very numerous American aircraft carriers. There was one big difference between the American operations and our own as far as the carriers were concerned, which was that, owing to the much greater range of the American carrier-borne fighters than our own, the carriers and their heavy ship supporting forces were able to operate at much greater distances away from their targets. This naturally gave a much greater manœuvring power to the

ships concerned and a greater freedom from interference by enemy surface forces; fortunately the British were not as much threatened by such interference as the American forces.

Up to the time of writing only one further large-scale assault operation in which carriers have taken part has been carried out in European waters; this was the landing of the Seventh United States Army in the South of France on August 15, 1944. With the experience gained at Salerno, and with ample time for planning, equipping and training, a far more versatile Air Support Force was built up for this operation. The undertaking itself was also more ambitious, and was staged to take place on beaches which were very much further from the advanced land bases than in the case of Salerno. Moreover, much detail of technique had been improved, and the pilots of our fighters in the carriers were fully trained in the tasks of tactical air support. As at Salerno, considerable air opposition was expected, but in fact far less, hardly any at all, was experienced. the other hand, the ground "flak" defences everywhere where German forces were to be found, and especially in the port areas of Toulon and Marseilles, were strong and active. Air support was provided by these carrier aircraft for nearly a fortnight; nine carriers, all of the escort type, took part, two being United States ships. The force was commanded by two carrier Admirals, one British, Rear Admiral Troubridge, and one American, Rear Admiral Durgin. Besides the intrinsic interest of its amphibious nature, this operation had the additional special interest that, in it, carriers and other ships of the two navies were acting in the closest tactical co-ordination with complete ease and harmony.

Lack of space prevents the devotion of more time to this subject of the co-operation between the carriers of the Allies. It has, however, been carried out on an important scale as a deliberate policy, and the greatest good has come from it. British carriers have been attached to American task forces, and vice versa, in the Pacific, in the East Indies, in the Mediterranean, and in Home Waters, and there have even been exchanges of aircraft squadrons, with their crews, between the ships. Besides a valuable pooling of both technical and operational ideas, a great respect for and interest in each other's fighting methods has also

grown up, which must be a thing of lasting value.

CONCLUSION.

It remains for future events to complete this story. Lessons, however, of the utmost importance to the future of British Imperial Defence are to be drawn from what has already happened. So rapid and far-reaching have been the developments in carrier warfare that one must hesitate to draw conclusions on almost any air issue in future strategy without first making a most careful examination of how far these developments may not go.

Already we have seen many old beliefs in the limitations of the carrier, and in the inherent inferiority of carrier-borne aircraft, shattered. Carriers now can, when in sufficient numbers, approach enemy land-air bases with comparative safety; blows can be delivered from great distances at enemy battlefleets, so that close action between the main forces may never develop. A single carrier may "find, fix, and finish" an enemy heavy ship. The carrier's alleged high vulnerability no longer has the meaning it had, because carrier operations include the tactics of active

self-defence which are effective and justify her normal employment in close contact with the enemy.

Carrier-borne aircraft themselves are making rapid advances in performance and versatility, and it is already within reasonable probability that they may in some respects outclass their shore-based counterparts. With command of the sea, and that is a condition about which there is no compromise, carriers can now take the air war to the enemy's front gate. Will not these ships prove, by virtue of the immense mobility which they can give to aircraft both for offence and defence, to be our most important fleet units? Let us remember the lessons of these years so that we are never again lacking in an adequate margin of carrier strength.

"VOLAGE."

CHAPTER XI

THE NAVY AFTER THE WAR.

As the war draws steadily to its close it is inevitable that attention becomes directed to the constitution and purpose of our armed forces after the war. This is reflected in the many articles that appear on the subject of the training of the youth of the country, and in the House of Commons in many references during debate to post-war defence establishment.

It has never before been so difficult to estimate defence requirements In olden times the Government, believing, or pretending to believe, that the peace was, in the words of the treaties "perpetual and universal," paid off the Fleet and disbanded the crews. This, though unsatisfactory to the officers and men, had no grave consequences because ships and weapons remained unaltered for centuries and a ship that had been 10 or 15 years in the dockyard, stripped to a gantline, could in a few weeks be brought forward for service. Today it is no exaggeration to say that if a similar practice were followed the ships could not be brought forward for war service in under a year, if ever. It would take a year to produce the large range of technical experts-engine-room artificers, electrical artificers, ordnance artificers—and the higher gunnery and torpedo ratings, essential today, are the product of years of experience and training. A complication today is that this is an age when the maritime powers have become accustomed to signing treaties of limitation which define exactly how many ships of every type each maritime power may maintain, and it is impossible to forecast what form these treaties will take in the future. A further complication is that there is a general desire in the world that peace should be ensured by the principal powers acting together, and that portends some form of international force, which must have considerable repercussions on the strength of national forces.

But in this complex picture there are two vitally important factors for the British Empire. One is that for any period ahead that we need consider, Great Britain will be the only country that is so vulnerable to the severing of her sea lines of communication that all life will stop in three or four weeks if no cargo carrying steamers enter her ports. other is that the Merchant Ship will not change its general features in any time that we have to consider. A steel casket that can contain a great cargo of heavy material and can proceed across the oceans at economical speed—that is the Merchant Ship today, and that will be the Merchant Ship in 50 years time. During this Second World War there has been an all-round increase of speed. Planes, transport, tanks, ships have been continually increasing their speed, and there has also been a steady increase in the destructive power of weapons. But in this picture that has been unfolding before us of weapons hurrying hither and thither on their grim business at immense speed there has been one constant—the Merchant Ship—and it is round that ship that all the sea battles of this war have been fought. In war it is therefore the defence of that ship that is the basic requirement in our defence system, and we must be able to defend that ship against all forms of attack if we wish to survive. That attack can at present be made and probably for many years ahead will be made by surface ships, underwater ships, and from the air.

With every advance in science the capital ship changes its form and power and there are many who believe that the capital ship as we know it today will disappear from the naval armoury. That view springs partly from the composition of the American fleets in the Pacific war. That war is being fought over immense distances and in weather conditions usually suitable for flying, and as a result the aircraft carrier has been playing a dominant part. But the aircraft carrier is very vulnerable to attack by surface craft, and so we see these carriers operating under very strong protection of battleships, cruisers, and destroyers. The battleship is in fact playing a dominant part in the Pacific war, and the composition of the British forces that have been augmenting the American offensive by repeated attacks on the Japanese bases in the Dutch East Indies resembles closely the composition of the American task forces.

But it would be taking a superficial view to assume that operating squadrons in the future will always be composed mainly of carriers. In the North Atlantic, where the winter gales often last a week or more and there are long periods of low visibility, the aeroplane's powers of attack and defence are severely restricted; but the worst winter conditions will not prevent battleships and heavy cruisers from attacking with their guns, and the new methods of radio-location enable a ship bent on attack to find her quarry in any conditions. The North Atlantic trade routes are crowded with shipping every day, and we can no more afford to risk a temporary cessation of the flow in winter than in summer. It follows that if other maritime powers build large, heavily-gunned, armoured ships we will have to build ships of commensurate power, and these ships

will, as formerly, be the basic units of the Fleet.

Making full provision for the safeguarding of the North Atlantic routes is not, unfortunately, enough today. We are so situated that a cessation of imports from South America, South Africa, Australia, and New Zealand would soon produce a serious shortage of food and essential commodites. It is for this reason that the Admiralty in the past has always striven, not always successfully, to build and maintain a large number of cruisers to counter the operations of enemy ocean raiders. We found in the First World War that there is no more difficult task than bringing to action a raiding vessel that, by successful ruses, prevents her victims from sending out a wireless signal. German raiders in the Second World War also enjoyed long months of immunity from interference, and were heard of one day sinking ships in the South Pacific Islands, the next day sinking ships near the Galapagos Islands, and the next day laying mines off the Cape of Good Hope and the Tasmanian coast. The protection of the immensely long ocean routes will no doubt in future be entrusted to forces composed of carriers escorted by surface vessels capable of meeting in battle any surface vessels the enemy may despatch to the area.

We do not know for certain that the submarine will continue to be a major weapon of war. We endeavoured to persuade the other maritime powers to abolish the submarine during discussions on the several Naval treaties that were concluded between the First and Second World Wars, because the submarine cannot operate in accordance with the laws governing sea warfare which lay down that a merchant ship must be given warning before she is sunk, that the crew must be given an opportunity of taking to their boats and that land is within rowing distance of the boats. Efforts

to abolish the submarine may be resumed after this war, but they are unlikely to be successful, because our boasted advance in civilization is certainly not reflected in more civilized methods of conducting war. Only the most brutal of the pirate captains who sailed under the Jolly Roger put to death the passengers and crews of the ships they captured, and they at least had the excuse that they could not accommodate and feed any more people. In the Second World War the captains of German disguised raiders have on several occasions sunk large merchant ships without leaving any trace and made sure that none of the crew were able to take to a boat. For them there was not the excuse that they could not accommodate and feed the crews of their victims. It would be well for the British Empire, whose existence depends on a continual flow of shipping, if agreement was reached to abolish the submarine, but it is more likely that the British Admiralty will again be faced with the problem of building up and maintaining a sufficiency of anti-submarine forces to protect seaborne trade at the outset of war and with the problem of making plans to ensure that the anti-submarine surface forces will be quickly augmented after the declaration of war.

The British Admiralty will always be faced with the difficulty that a very large number of ships of the smaller types—corvettes, frigates, sloops -are required to form the escorts and hunting squadrons, and maintaining the officers and crews necessary to man these ships in peacetime would absorb so much of the money available for maintaining and manning existing ships of the larger types, and for building and manning new ships of the larger types, that to do so would sadly unbalance the Navy as a whole. Moreover, battleships, large carriers, destroyers, and submarines take a very long time to build, and so the money made available for the estimates is inevitably spent on ships that may take as much as three years to complete in preference to ships that can in emergency be built in a few months. It is for this reason that the outbreak of the Second World War found us very short of vessels suitable for escorting the Atlantic When the British Government decided to re-arm there was an immense field of construction to be covered in all three Services and money was not unlimited. Consequently, in the last 25 years we have twice run things dangerously fine in the Battle of the Atlantic. On both occasions there has been no doubt about the measures necessary to reduce the depredations of the German submarines, but on neither occasion have we built up our anti-submarine forces in time, either air or surface. might find it impossible to restore a rapidly deteriorating situation for a third time.

In the Second World War the aeroplane has been a dominant factor in the protection of seaborne trade. The escort carrier and merchant ship reconstructed to carry aircraft proved one of the best counters to the intensified submarine attack and the new pack tactics. Not only could patrol aeroplanes ahead of the convoy warn the convoy of the presence of submarines, but they forced the submarines to dive, thus preventing them reaching an attack position and also frequently damaged or sunk them with their guns or depth charges. The shore-based aeroplane also had a profound effect on the whole course of the Battle of the Atlantic. As soon as "very-long-range" aircraft began to operate over the convoy routes the sinkings began to fall, and they fell progressively as the numbers of aircraft increased and new bases were established. The last of these bases was in the Azores, and when that base was in operation nearly the

whole of the convoy routes were watched over by aeroplanes. Not only did these "very-long-range" aircraft destroy many submarines, but they broke up concentrations and brought to nought the enemy's attempts to develop the pack tactics. The German counter of drawing in air by a long pipe, and thus avoiding surfacing, came late in the day and after the submarine had been defeated.

As aeroplanes increase their radius of action it seems likely that all the tasks for aircraft protecting seaborne trade will be undertaken by shore-based aircraft. This would be far more economical. The execution of this policy will depend, however, entirely on the geographical position and facilities of bases in the various oceans. We are fortunate in possessing many bases suitable as unsinkable aircraft carriers, and if the shore-based aircraft is the solution it will be of paramount importance to provide adequate defence for these bases so that we do not lose them to an amphibious operation. It is axiomatic that sea power today can only be exercised from defended bases, and the aircraft protecting seaborne trade are integral to sea power today and will no doubt be more so in the future.

The operational and administrative control of these "very-long-range" aircraft exercising sea power will have to receive consideration sooner or later. We began the Second World War with a Navy and an Aircraft Coastal Command only linked together by liaison officers. As the war developed and surface craft and aircraft began to attack the same submarine at the same time, resistance to a more complete integration of the two Services gradually vanished and today ships and aircraft all work under one operational command. It would be absurd to return to the bad old days when the services were purposely disintegrated, and it will be for consideration whether the existing close integration is to endure as the best solution, or whether aircraft specially designed for operations over the sea will become an integral part of the Royal Navy.

The form of attack from the air is far more difficult to forecast. Science is moving forward at a great pace. We are told that it is only a question of time before the flying bomb or rocket bomb become weapons of precision and that the bomber as we know it today will consequently disappear. Bombers cost an immense sum of money, and their operation costs many lives, and if the same blow can be delivered by a pilotless bomb fired by the artillery, no country will spend money on man-manned bombers. Scientists also tell us that it is only a question of time before a projectile fired from the ground or the air can be homed on to a moving object. It may therefore well be that the defence of convoys against air attack will be by some new form of gun and projectile. If this dream of the scientists does not materialize then the defence will be by carrier aircraft and by land-based aircraft.

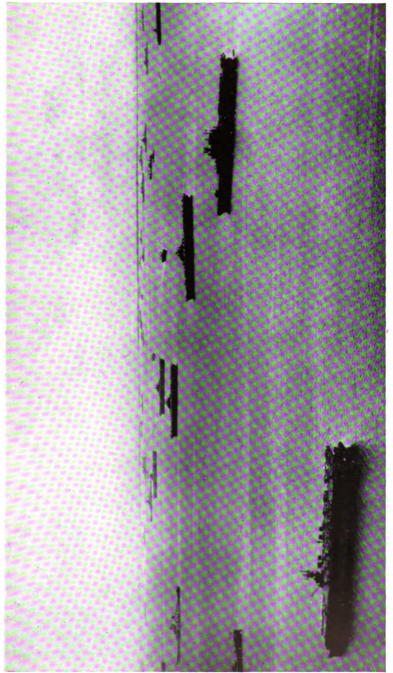
All this is axiomatic, and it might therefore seem that we need have no grounds for apprehension in the future, no grounds for assuming that any British Government will not take the defence of seaborne trade as the basic requirement in the defence structure. But there is a danger, a danger that may arise from the fact that we are the only nation in the world that periodically comes near to unbalancing its defence system as a result of propaganda and pressure to replace existing weapons by a new weapon.

When the French introduced the torpedo boat there were many who immediately assumed that all larger men-of-war had been rendered valueless. Immediately after the last war there was a campaign to pay

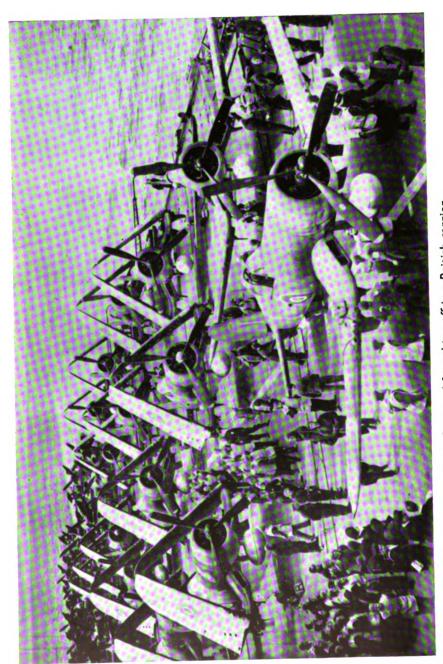
off all surface ships on the grounds that the submarine now dominated in naval war. Some of our press aided and abetted the campaigners and papers appeared with large headlines, "What's the use of a battleship?" The campaigners never stopped for one moment to consider how the submarine was to defend our great flow of seaborne imports. A few years later a campaign which had many similar features was launched to pay off the Navy on the grounds that the aeroplane would dominate any future The campaigners, as before, never stopped to ask how the aeroplane was to defend our seaborne trade. That campaign was characterized by great exaggeration. The people of this country were told that they could have a thousand aeroplanes for one battleship, a very tempting suggestion—the number was actually between 37 and 40. Dominion Governments were pressed to do away with gun defences of convoy assembly ports on the grounds that squadrons of aeroplanes could sink any enemy ship before she came within range of the anchorage. No consideration was given to the average state of the weather, the average visibility, or the fact that a raider would attack at night or in misty weather. But this time the campaigners succeeded in shaking the confidence of the Government, and the Government ordered an enquiry to be held. The committee of enquiry, after hearing all the evidence, concluded that our shipbuilding programme should continue and the Government accepted their recommendation. That was one of the most important decisions ever made by a British Government.

If we had paid off our battleships and scrapped those on the stocks the German Scharnhorst and Gneisenau and the pocket battleships would have taken up their war stations in mid-Atlantic, off the River Plate, off the St. Lawrence, and all sailings from the United Kingdom and from the Americas would have stopped. Not only would they have stopped, but they would never have been resumed, because we would have been powerless to remove the German capital ships from the trade routes. We would have had no weapon with which to attack them. This point was brought out in the debate in the House of Commons in March, 1945, on the Navy Estimates. The counter-argument was advanced that if we had abolished the capital ship, the scientists would have discovered some means of dealing with the enemy capital ships. The speaker, when asked what he had in mind, admitted that he had no idea what those means would be, but nevertheless maintained his standpoint that there would have been "something." Yet, when we go to war, we have to fight with existing weapons, not with those that exist only in the dreams The best scientific brains had been working on the developof scientists. ment of the aircraft for many years before the outbreak of the Second World War, but it had still not attained the range, or the weapon, to attack and destroy ships on the other side of the Atlantic.

As we, of all nations, have fallen into this habit, we must expect that the post-war years will witness a recurrence of these campaigns. New and wonderful weapons will no doubt appear from time to time, and as each weapon appears it will attract the attention of enthusiasts and those enthusiasts will, on the platform and in the press, urge the Government to discard existing weapons and to concentrate on the new weapon. It has been truly said that it is possible to be too quick in discarding an old weapon as well as too slow in adopting a new weapon. It is, of course, true that if a new weapon with a striking power exceeding anything so far produced is developed by an enemy, and we have ignored the advice



American task force anchored in the lagoon of a Marshall Islands atoll. (U.S. official Nary photograph.)



Aircraft ranged for taking off in a British carrier. (British official photograph. Crown copyright reserved.)

of the scientists and failed to develop a similar weapon or to pay attention to its counter, we might incur defeat; but it is a strange fact that no weapon ever passes wholly out of the armoury; we still read of our soldiers drawing their knives, battles still take place at point-blank range, and we still wear helmets.

There is, however, a ray of hope for the future. The three Services, which were purposely disintegrated before the war, have on the anvil of war become hammered into one Service. On all levels officers of the three Services are working together, sharing one another's tribulations, pooling their respective resources, understanding one another's difficulties, and sharing equally the victories. It is these officers who in a few years' time will become the Government's professional advisers, and therefore there is hope that we may be at the dawn of a new, saner, and healthier era in which it will be considered un-British (as it is) for one Service to advertise itself to the detriment of the other Services, and in which all Services will have but one object in view—the maintenance of a defence system which will have as its fundamental purpose the safeguarding first of these islands and next of our seaborne trade. Once we have secured a regular flow of seaborne trade in war-time everything else follows. The Army can be built up and equipped to land on the enemy's shores and the Air Force can be built up and equipped to shatter the enemy's war production and to support the Navy's and the Army's operations.

W. M. JAMES.

REFERENCE SECTION

DIMENSIONS AND PARTICULARS OF BRITISH AND FOREIGN WARSHIPS.

Warships are arranged in classes, except in some instances where they are arranged alphabetically. The following abbreviations are used throughout the List:—

a.g.b. Armoured gunboat. A.T. Aircraft tender. g.b. Gunboat. E.G. Escort Carrier. b. Battleship. 8.C. Seaplane carrier. b.c. Battle cruiser. H.N.s. Harvey nickel steel. Harveyised or l.cr. Light cruiser. H.8. similar hard-faced steel. c.d.s. Coast-defence ship. K.s. Krupp steel. A.M.Cr. Armed Merchant cruiser. t. Speed and H.P. at trials M.Cr. Minelaying cruiser. (in speed and H.P. cr. Cruiser. columns). A.A. or H.A. Auti-aircraft guns. b.p. Length of ship between A.C. Aircraft carrier. perpendiculars.

Light guns under 15 cwt., including boats' guns.

M. Machine guns.

m.p.p. Multiple pom poms.

Torpedo Tubes: (D.) = double; (T.) = triple; (Q.) = quadruple; (sub.) = submerged; a.w. = above water.

The following abbreviations are used to distinguish the various types of boilers:—

W.T. Water-tube boilers, where the I. Indret. type is not known. K. Kanpon. My. Miyabara. A. Ansaldo. B. Belleville. Nic. Niclausse. Bl. Blechynden. Pen. Penhoet. T. Thornycroft. B. & W. Babcock and Wilcox. T.S. Thornycroft-Schulz. D'A. D'Allest. W.F. White-Forster. G. Guyot.

Y. Yarrow.

The following abbreviations distinguish types of machinery:-

P.T. Parsons turbines. tur. Turbines, where the type is C.T. Curtis turbines. not known.

B.C.T. Brown-Curtis turbines. R. Steam reciprocating engines.

(G.) Geared turbines. I.C. Internal combustion engines.

D. Diesel. W.G.T. Westinghouse geared turbines.

Rat. Rateau.

In later pages (marked P1, P2, etc., towards the end of the volume) plans of most of the ships appear.

Unless otherwise stated, the displacements are Standard displacements (i.e. deep less fuel and reserve feed water).

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Ч	onnel 1	Date o	+ 8g+	BG G	Bdg.	1939 1941	1939	1940	1940	1925	1925	1916	1915	1915	1915
	Makers of engines	Type of machinery	J. Brown Fairfield	Vickers (Welker)	Cammell	Vickers (Barrow)	P.T. (G.) J. Brown P.T. (G.)	Fairfield	Wallsend	Wallsend	Cammell Laird	B.C.T.(G.) Beardmore, 1916 1917 3,295,810	Palmer, P.T. 1915 1916 2,449,680	Vickers	Parsons
	Where	built	J. Brown Fairfield	Vickers (Walker)		er (J. Brown	Fairfield	Swan	N'wc'stle-	Birkenb'd	Dalmuir	Jarrow	Barrow	Portsm'th
	Horse	Type of boilers								45,000	:	40,000	i :	2	2
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Walker Wallsend P.T.	Govan Fairfield B.C.T.	80,000 Portsm'th Wallsend B & W.	80,000 Devonp'rt Hawthorn P.T.	Govan Fairfield B.C.T.
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Malaya	Valiant	Queen Elizabeth	b. Warspite	b.c. Renown*

* Renown modernised (1939), including re-engining. ‡ Over rubbers.

 \dagger One of these vessels was launched Nov., 1944, and named Vanguard. \parallel Speed without bulges.

¶ Built at the charge of the Federated Malay States.

GREAT BRITAIN.—AIRCRAFT CARRIERS.

	Com- ple- pedo (war)						-	420	728	139	350
	Speec	knots 32		307				20.2	30	=======================================	21
	Tor- pedo tubes							1	1	F	1 .
Armament	Guns	16 4·5-in guns.	"	16 4.5-in. guns; 20 smaller	,, ,,	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	" "	4 3-pr., 4 M., 10 L., accommodates 20	arcrate. 12 4-in. A.A., 4 2-pr., m.p.p.; 46 smaller, 33 aircraft	4 M., 10 L., 1 catapult.	4 4.7-in. A.A., 4 2-pr. Pom Poms, 4 3-pr. 4 M.; 20 L.; 9 sea- planes.
onr	Gun posi- tion	ii.							!-		
Armour	Belt	in.							00		=
	Cost	43						Purchased under con-	struction 2,436,603(a)	Purchased under con-	266,796
	Date of complete tion	1944	1944	1940	1941	1940	1941	1918	1925 As an air- craft	1914	1929
	Date of launch	1942	1942	1939	1939	1939	1940	1917	1916 As a cruiser	1914	1928
	Maker of engines Type of machinery	J. Brown	Fairfield	Vickers	Wallsend	Harland & Wolff	Vickers (Rarrow)	Beardmore P.T.	Wallsend Engn'g Co. B.C.T.(G),	Blyth S. B. Co.	Sydney
	Where	J. Brown	Fairfield	Vickers	Vickers	Harland & Wolff	(Belfast) Vickers	Dalmuir	Walker (Arm- strong)	Blyth	Cockatoo Island
	Horse-power Type of	140,000	*	111,000				20,000	90,000 Y.	3000	12,000 P.T. (a)
	Draught	ft. in. 22 4	"	22 4	2		2	21 0	21 6	17 6	15 6
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	Stand- ard dis- place- ment	tons 23,000	*	23,000			*	14,000	22,450	0069	4800
	NAME	Indefatigable	Implacable	Illustrious	Victorious	Formidable	Indomitable	Argus	Furious	Pegasus * (ex-Ark Royal)	Albatross q
	Class	A.C.	A.C.	A.C.	A.C.	Y.C	A.C.	A.C.	ogle Ogle	S.C.	S.C.

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GREAT BRITAIN.—CRUISERS.

	Comple- ple- ment (war)	685	982	700	-
	Tor- pedo Speedment (war)	knots 32‡	32	312	323
	Tor- pedo tubes	8 21, (Q.)	8 21, a.w. (Q.)	Nii	21° (T)
Armament	Guns	8 8-in., 8 4-in. A.A., 4 3-pr., 2 2-pr. Pom Poms, 2 M., 10 L., 1 aircraft, 1 catapult.	8 8-in., 8 4-in. A.A., 4 3-pr., 4 M., 10 L., 1 aircraft, 1 cata- pult.	88-in., 84-in. A.A., 43-pr. 42-pr. Pom Poms, 4 x., 8 L., 3 aircraft. Cumberland and Suffolk, 64-in. A.A., Kent, 1 aircraft.	12 6-in., 12 4-in. A.A., 20 smaller, 3 aircraft, 1 catapult.
our	Gun posi- tion	.ġ			
Armour	Belt	j.j			
	Cost	£ 2,141,961	1,975,800† 2,007,275 1,966,559	2,180,240† 2,029,526 2,960,821* 2,084,213†	2,176,731‡
	Date of com- ple- tion	1930	1929 1929 1929	1928 1928 1928 1928	1939
	Date of launch	1928	1928 1927 1927	1926 1926 1926 1926	1938
	Maker of engines	Fairfield	Hawthorn Leslie Vickers Fairfield	Parsons Fairfield Vickers Hawthorn	Harland & Wolff
	Where	Fairfield	Hawthorn Leslie Devonp'rt Ports- mouth	Ports- mouth Govan Barrow Chatham	Harland & Wolff
Horse-	power. Type of machinery and boilers	80,000 P.T.(G.)	80,000 P.T.(G.)	80,000 (G.) Y.	80,000 P.T.(G.)
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	Length (ex- treme)	ft. 633	633	630	6131
	Stand- ard dis- place- ment	tons 9925	9830 9850 9850	10,000	10,000
	NAME	Norfolk	Sussex Devonshire London	Suffolk Berwick Cumberland Kent	Belfast
	Class	Norfolk Class	Tondon Class	Social	Improved South- ampton

10.00   50.14   61.8   17.0   75.000   Vickers   20.014   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13.05   13	South-	South- Liverpool	9400	5912	62 4	17.5	82,500 P.T.(G.)	Fairfield	Fairfield	1937	1938		12.6	-in., 8 4	12 6-in., 8 4-in. A.A., 20 smaller, 1 cata-	21,	32	740
Substitute   1.	Class	Newcastle	9100	5913	8 19	17 0	75,000	1	Vickers	1936	1937	1,960,000‡	ď,	ult, 3 ai	reraft.	E.	**	2
Strengtopen   1,		Glasgow Sheffield	2 2	2 2		: :		To a		1936	1937	2 2		2 2		2 2	"	2 2
Opylon         SSS51         ©2 0         16 6         72,500         Stephen         Stephen         1942         1943         Hope of the smaller.         16 formal of the smaller.         17,500         Stephen         Stephen         1943         1943         Hope of the smaller.         16 formal of the smaller.         17,500         Name of the smaller.         1841         1943         Hope of the smaller.         1841         Hope of		Birmingham	33	22	**	:	**	(walker) Devonp'rt	J. Brown	1936	1937	***		*		"	"	
Wewfoundiand <t< th=""><th>(Cganda</th><th>Ceylon</th><th>8000</th><th>5553</th><th>62 0</th><th>16 6</th><th>72,500</th><th></th><th>Stephen</th><th>1942</th><th>1943</th><th></th><th>-9 6</th><th>in., 8 4-</th><th>in. A.A.,</th><th>96</th><th>"</th><th></th></t<>	(Cganda	Ceylon	8000	5553	62 0	16 6	72,500		Stephen	1942	1943		-9 6	in., 8 4-	in. A.A.,	96	"	
Uganda §         "         "         "Authanted Achinales         Parasons         1941         1942         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "	Class	Newfoundland	"		**		r.1.(G.)	Swan	Wallsend	1941	1943			o smaller		Œ		
Bernuda         8000         5554         62 0         16 6         72,500         J. Brown         1941         1942         30         12 6-in., 8 4-in., 16         8         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32         32 <t< th=""><th></th><th>Uganda §</th><th>"</th><th></th><th>"</th><th>*</th><th>"</th><th>Je Car</th><th>Parsons</th><th>1941</th><th>1943</th><th></th><th></th><th>*</th><th>*</th><th>:</th><th>"</th><th></th></t<>		Uganda §	"		"	*	"	Je Car	Parsons	1941	1943			*	*	:	"	
Gambia         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         " </th <th>Fiji</th> <th>Bermuda</th> <th>8000</th> <th>5554</th> <th>62 0</th> <th>16 6</th> <th>72,500</th> <th>r)</th> <th>J. Brown</th> <th>1941</th> <th>1942</th> <th></th> <th>12 6</th> <th>5-in., 8 .</th> <th>4-in., 16</th> <th>9</th> <th>32</th> <th></th>	Fiji	Bermuda	8000	5554	62 0	16 6	72,500	r)	J. Brown	1941	1942		12 6	5-in., 8 .	4-in., 16	9	32	
Jamaica         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         " </th <th>Class</th> <th>Gambia</th> <th>"</th> <th>°</th> <th>"</th> <th></th> <th></th> <th>Swan</th> <th>Wallsend</th> <th>1940</th> <th>1942</th> <th></th> <th>18</th> <th>naller.</th> <th></th> <th>Œ</th> <th></th> <th></th>	Class	Gambia	"	°	"			Swan	Wallsend	1940	1942		18	naller.		Œ		
Mauritius         "         "         "         Wallsend         1939         1941         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "         "		Jamaica	**	"	33	:	:	in a	Vickers	1940	1942		_			:		
Nigeria   1,		Mauritius	"	*	**			Swan	Wallsend	1939	1941		_				:	
Migeria         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,,         ,, <t< th=""><th></th><th>Kenya</th><th>"</th><th>:</th><th>**</th><th>1</th><th>:</th><th></th><th>Stephen</th><th>1939</th><th>1940</th><th></th><th></th><th></th><th></th><th></th><th>:</th><th></th></t<>		Kenya	"	:	**	1	:		Stephen	1939	1940						:	
Aurora         5270         506         51 0         13 10         64,000 mouth mouth mouth mouth mouth mouth stellars         Wallsend 1936         1934         1935         1,233,921 processor         6 6-in., 4 4-in. A.A., 6 smaller, 1 cata pult, 1 arroraft. Total pult, 1 a	Digit	Nigeria	"		2	*	•	Vickers	Parsons	1939	1940							
Arethusa         5220         "         "         T.1.(G.)         Chatham         Parsons         1934         1935         1,280,463‡         9 annate: 1 cata 21         1.280,463‡         9 annate: 1 cata 21         T.1.(G.)         "         "         "         T.1.(G.)         Vickers         Vickers         1934         1935         1,491,417‡         8 d-in., 8 d-in., 8 d-in., A.A., 4 str., A.A., 2 str.         8 d-in., 8 d-in., A.A., 2 str.         1.280,463‡         1.280,463‡         1.280,463‡         1.280,463‡         1.280,463‡         1.280,463‡         1.280,463‡         1.280,417‡         1.280,4417‡         1.280,4417‡         1.280,4417‡         1.280,4417‡         1.280,4417‡         1.280,4417‡         1.280,4417‡         1.280,4417‡         1.280,4417‡         1.280,4417‡         1.280,4417‡         1.280,4417‡         1.280,4417‡         1.280,4417‡         1.280,4417‡         1.280,44117‡         1.280,44117‡         1.280,44117‡         1.280,44117‡         1.280,44117‡         1.280,44117‡         1.280,44117‡         1.280,44117‡         1.280,44117‡         1.280,44117‡         1.280,44117‡         1.280,44117‡         1.280,44117‡         1.280,44117‡         1.280,44117‡         1.280,44117‡         1.280,44117‡         1.280,44117‡         1.280,44117‡         1.280,44117‡         1.280,44117‡         1.280,44117‡         1.280,44117‡	Arethusa	Aurora	5270	506	51 0	13 10	64,000	Ports-	Wallsend	_	_	1,233,921‡		in., 4 4-	in. A.A.,	9	324	200
Ajax         6985         5544         55 8         16 0         72,000 P.T.(G.)         Vickers         1984         1935         1,491,417‡         8 6-in., 8 4-in., A.A., 4 8 32‡         8 32‡           Orion         7215             Devonp'rt Vickers         Vickers         1932         1934         1,548,663‡         8 6-in., 4 4-in., A.A., 4 8 32‡         32‡           Achilles            7030         554         55 8         16 0         72,000         Cammell Laird         Cammell Laird         1933         1933         8 6-in., 4 4-in., 8 4-in.         8 32‡           Leander            7270           Devonp'rt Vickers         Vickers         1931         1933         1,667,819         A.A.), 1 aircraft.	by C	Arethusa	5220		•	:	r.r.(G.)	Chatham	Parsons			1,280,463‡		smaller, ilt, 1 air in twin	craft.	Œ		
Orion         7215         "."         F.T.(G.)         Devonp'rt         Vickers         1932         1934         1,548,663‡         3-pr.,5 M.A., 2 sea.         21"         ".           Achilles         7030         554‡         55 8         16 0         72,000         Cammell         Cammell         1932         1933         1938         8 6-in., 4 4-in. A.A., 8 32‡         32‡           Leander         7270         55 2         ".         Devonp'rt         Vickers         1931         1933         1,667,819         A.A.), 1 aircraft.         ".         ".         ".	Leander	Ajax	6985	5541	55 8	16 0	72,000		Vickers	1934		1,491,417‡	86-in	g in Aur	ora.	œ	324	570
Achilles   7030 5544 55 8 16 0 72,000   Cammell   Cammell   1932 1933   1967,819   8 6-in., 4 4-in. A.A., 8   324	08	Orion	7215			2	F.T.(G.)		Vickers	1932		1,548,663‡	7.7	pr., 5 M., anes, 1 c	A., 2 sea- atapult.		•	
7270 ,, 55 2 ,, , Devonp'rt Vickers 1931 1933 1,667,819 A.A.), 1 aircraft. ,, ,,	le	Achilles	7030	554 <del>1</del>	55 8	16 0			Cammell	1932	1933		8 6-1	in., 4 4-	in. A.A.,	86	324	570
		Leander	7270		55 2		"		Vickers	_		1,667,819	7 4	A.), 1 air	craft.	1 :	:	

* Total estimated cost of ship, including guns. † Estimated cost, excluding armament and ordnance stores. † Total estimated cost including guns and aircraft. § Transferred to Royal Canadian Navy.

GREAT BRITAIN.—CRUISERS, &c.—continued.

	Comple- ple- ment (war)	460	715	747	415	:	£	430	E :	420	n
	Comple-Speed ment (war)	knots 29 "" " " " " " " " " " " " " " " " " "	304	294	53	"		29	2	29	"
	Tor- pedo tubes	£ 1312	4,0	12 :	8			8 (D)		8	
Armament	Guns	in. Shields 6 6-in., 3 4-in. A.A., 2 M., 4 3-pr., 8 L., 2 2-pr. Pom Poms.	Shields 5 7.5-in., 5 4-in. A.A.,	4 3-pr., 2 2-pr., 2 M., 8 L.	5 6-in., 2 3-in. A.A., 4 3-or., 2 2-or.	Pom Poms, 2 M.,	8 4-in. A.A., 1 2-pr. m.p.p.	5 6-in., 2 3-in. A.A., 4 3-pr., 2 2-pr. Pom Poms; 2 M.,	8 4-in. A.A., 1 m.p.p., 2 M.G., 8 Lewis.	5 6-in., 2 3-in. A.A.,	Pom Poms, 2 M.,
nc	Gun posi- tion	in. Shields	Shields	*							
Armour	Belt	·igo : : : : :	n		က	2		w *	*	က	
	Cost	1,146,904 1,016,870 954,667 785,145 701,600 750,025	2,035,915	1,599,741	984,720	692,308	669,216	542,507 529,248	794,201	547,300	534,583
	Date of com- ple- tion	1922 1922 1921 1919 1918	1924	1919	1922	1919	1918	1917	1918	1917	1917
	Date of aunch	1919 1919 1919 1918 1918	1920	1917	6161	1918	1918	1917	1917	1916	1916
	Maker of engines	Vickers Fairfield Scotts Wallsend Wallsend Palmers	Wallsend	Parsons	Cammell Laird	Fairfield	Fairfield	Fairfield J. Brown	Harland & Wolff	Cammell	Scotts
	Where	Vickers Fairfield Scotts Armstrong Armstrong Palmers	Devonport	Chatham	Cammell	Fairfield	Fairfield	Fairfield J. Brown	Beardmore Harland	Cammell	Scotts
Horse-	power. Type of machinery and boilers	40,000 (G.) Y.	65,000	55,000 P.T.(G.)	40,000 (G) V	"	"	40,000 (G.) Y.		40,000	""
	Draught	ft. in. 14 3 "" "" "" "" "" "" "" "" "" "" "" "" "	17.3		14 1	"	"	14 1		14 1	"
	Beam (ex- treme)	ft. in. 46 3 46 9 ,, ,, ,,	65 1	65 1	43 10	"		43 9	£	43 1	"
	Length (ex- treme)	ft. 471‡ 472‡ "	909	ŧ	4513			450 -450g	r.	450	,,
Stand-	ard dis- place- ment	tons 4850 ""	0986	9800	4200	,,	,,	4290	**	4180	**
	NAME	Diomede Despatch Durban Delhi Danae	Frobisher	Hawkins	Capetown §	Colombo §	Carlisle ‡	Cardiff	Curacoa ‡	Caledon	Caradoc
	Class	D Class	Hawkins	Class Digitize	Carlisle	G		Ceres		Caledon	Class

E Class	Emerald	7550	570	7 42	16 8	80,000	80,000   Armstrong   Wallsend   1920   1926   1,617,120	Wallsend	1920	1926		3-1		7 G-in.,		8	8	577
	Enterprise	7580	2	24 9	2	. (G) 1.	J. Brown J. Brown	J. Brown	1919	1926	1926 1,690,668	1		L G	Poms, 7 smaller.	iĝ	2	=
Dido	Argonaut	5450	206	50 5	14 0	000,20	Cammell	Cammell	1941	1961				8 or 10	8 or 10 5·25-in.		<b>8</b>	
Ciass	Bellons		=	:			_	Fairfields	1943	1943						ŧΕ		
	Black Prince	:	•	2	:		Harland	Harland	1942	1943				· 				
	Geopatra	:	2	:	=	:	Hawthorn Hawthorn	Hawthern	1940	1941				:				
	Diadem	:		:	2	:	Hawthorn Hawthorn	Hawthorn	1942	1944	_			:	•			
	Dido	:			:		_	Cammell	1939	1940				:	•			
	Buryalns	:	:	:	=	:	Chatham	Hawthorn	1940	1941				:	•			
	Phoebe	:	:	:	2	•	Fairfields	Fairfields	1839	1940					•			
	Royalist	:	:	:	=	:	Scotts	Scotts	1942	1943					2			
	Scylla	•	:	2	2	•	Scotts	Scotts	1940	1942				8 or 10	8 or 10 smaller			
	Strius	:	:			:		Scotts	1940	1943				8 or 10	8 or 10 5-25-in.			
Destitus Class	Vindiotive †	9100	909	<b>28</b>	17 3	25,000 P.T.(G.)	mouth Harland & Wolff	Harland & Wolff	1918	1918	1,671,712	က	Shields	2 4.7.5 2 4.7.5 2 4.7.5	Shields 2 4.7-in., 4 3-pr. 1 3-pr., Pom Pom, 2 k., 8 r.	:	8	20
M. Cr. Class	Adventure	01-19	623	29 0	15 5	40,000 Tur. & Diesel	Devonport Vickers	Vickers	1924	1927	1,246,063			44.7-in 4.2-p 4 K.,	44.7-in., a.a., 43-pr., 42-pr. Pom Poms, 4 x., 8 x., 310 mines	:	8	700
bg]			+ Vinc	lictive is	demilitari	indictive is demilitarised and employed as a cadets' training ship.	loyed as a	adets' traini	dids an			#	nti-sirc	# Anti-aircraft ship.	é		1	ļ

indictive is demilitarised and employed as a cadets' training ship.

§ Being converted to anti-aircraft ship.

# GREAT BRITAIN.—MISCELLANEOUS CRAFT

Titania, 5,250 tons. BASE SHIPS.—Iron Duke; Alecto, 935 tons;

DESTROYER DEPOT SHIPS.—Greenwich (1916), 8,100 tons, 2 4-in. guns, 2 3-in. A.A.; Woolwich (1935), 8,750 tons, 15 knots, 4 4-in. A.A.; Tyne (1941), 11,000 tons, 8 4-5-in. A.A., 2 2-pr.

SUBMARINE DEFOR SHIPS.—Lucia, 5,800 tons; Cyclops, 11,300 tons, 13 knots; Maidstone (1938) and Forth (1939), 8,900 tons, 17 knots, 8 4-5-in., 4 3-pr.; Adamant, 12,500 tons, 17

REPARE SHTS.—Resource (Vickers', 1930), 12,300 tons, 15 knots, armament 4 4-in. A.A.; several others.

MINELAYERS (ex. Monitors), 1915.—Melpomene, 355 tons, 10 knots, 52 mines; (ex-trawlers) Linnet and Ringdove, 489 tons, 104 knots; Plover, 805 tons, 144 knots; Manxman (1941), 2,650 tons, 40 knots, 6 4-in. Apollo and Aradne. Schwizz, 13-pr.; Challenger, 1,140 tons, 1,200 H.P. (recip.), 12‡ knots; Franklin, 830 tons, 17 knots, 1 3-pr.; Scott (1939), 815 tons, 17

NON-MAGNETIC SURVEY VESSEL.—Research, building by Philip at Dartmouth. Saling vessel. Aux. motor, 160 B.H.P., 770 tons, 64 knots.

Netlayer Vessels.—Guardian (Chatham, 1931-3), 2,860 tons, 6,500 H.P., 18 knots, 2 4-in. A.A.; Protector (1934 programme), 2,900 tons, 20 knots, 1 4-in.;

MINING SCHOOL (VERNON) TENDER.—Nightingale (Portsmouth, 1931), Vernon (Portsmouth, 1932), displacement 275 tons, horse-power 400, speed 10 knots, coal capacity 15 tons; Blood-

Boox Devence Vessels.—Bownet, Burgonet, Dragonet, Falconet, Martinet, Planet, Planet, Signet, Sonnet, 850 I.H.P., 1 3-in.; Barbarian, Barbette, Barbrook, Barcastle, Barricade, Barricade, Barricade, Barrica, 730 tons, 850 I.H.P., 112 knots, 1 3-in.; Dunnet, 350 tons, 350 I.H.P., 10 knots, 1 3-in.; Jennet, Rennet, Rennet, Rennet, Ruannet, 345 tons, 1 3-in.; Bishopsgate, 290 tons, 1 3-in. (not self-propelled); Coronet, Barnet, 429 tons, 102 knots, 1 3-in.;

TENDERS.—(For Submarine depôt, Portland), Elfin (1933), 222 tons, 250 H.P., 9½ knots. (For Torpedo School) Redwing (1933), 225 tons, 250 H.P., 9½ knots.

Traverse.—Basset (1335), 460 tons, 14-in. gun; Edack water, Foyle and Boyne (War built), 400-500 tons; Lilac, Laurel, Holly, Hawthorn, Cedar, Cypress, Sycamore, Syringa, Magnolia, Willow, 570-660 tons, 14-in. gun; Turquoise, Topaze, Sapphire, Cornelian, Pearl, Ruby, purchased in 1835, 560-640 tons, 14-in. gun; Colne, Doon, Dee, Garry, Kennet, Liffey, 104 knots, 270-660 tons, 14-in. gun; Turquoise, Topaze, Sapphire, Cornelian, Pearl, Ruby, purchased in 1835, 560-640 tons, 14-in. gun; Colne, Doon, Dee, Garry, Kennet, Liffey, 104 knots, 260-600 tons; Sanchae, Cape Cornorm, Davenan, Dodar, Elin, Fir, Olive, Mangrove, Pine, Rovan, Wallutt, Whitehorn, Wistaria, 260-600 tons; Architechorn, Wistaria, 260-600 tons; Sanchae, Zapphire, Cape Argona, Cape Cornorm, Daneman, Davy, Derby County, Drangey, Huddersfield Town, Istria, Kelt, Kingston, Andalusite, Kingston Olivine, Kirkella, Lady Beryll, Lady Elsa, Leeds United, Leyland, Loch Melfort, Loch Tulla, Lord Hotham, Lord Lloyd, Lord Plender, Lord Wakefield, Man (A) War, Folk, Regal, Son, Sindonis, Spurs, Staffnes, Thornwick Bay, Turcoman, Weeland, York City, 4 in No. Trawlers building in Portugal; Lady Shriley (1837), Sawet Promise, William Stephens. Professor Class (6 vessels). Round Table Class (8 vessels). Military Class (6 vessels). Fish Class (7 vessels). Hill Class (7 vessels). Lake Class (8 vessels). Moros Gar, 22 Tof 14, 32 tons, 3650 B.H.P., 44 HS knots, 21-in. topedoes. Many others.

Moros Anti-Submaria Boars.—Number unknown.

Moros Anti-Submaria Boars.—Number unknown. FLEET TARGET SHIP.—Centurion (ex-battleship), 25,500 tons.

MOTOR MINESWEEPERS.—Nos. 1 and 2, 52 tons, 1,500 H.P., 15 knots.

MOTOR MINESWEEPERS.—Nos. 1 and 2, 52 tons, 1,500 tons, 12 knots, 2 15-in., 8 4-in., 2 3-in.A., ; 12 smaller guns. Roberts, Abercrombie. Moror Launches.—Number unknown.

AUXILIARIES.—Tugs, Drifters, Mooring lighters, etc.

HOSPITAL SHIPS.—Tugs, Drifters, Mooring lighters, etc.

HOSPITAL SHIPS.—Tugs, Drifters, Maine, 10,100 tons.

STORE SHIPS.—Tolinard, St. Julien, Maine, 10,100 tons.

ARXED MERCHANT VESSELS.—Number unknown.

ARXED MERCHANT VESSELS.—Number unknown.

OIL TANKERS.—Abbeydale, Aldersdale, Bishop Dale, Boardale, Cedardale, Derwentdale (1937—39), 11,500 tons D.W., 11½ knots.

OIL TANKERS.—Robeydale, Aldersdale, Brahmin, War Diwan, War Hindoo, War Kishna, War Nizam, War Pathan, War Pathan, War Shafari, War Shafari, War Brahmin, War Diwan, War Pathan, War Pathan, War Pathan, War Shafari, Van Shafari, War Shafari, Van Shafari, War Shafari, Van Shafari, War Shafari, War Shafari, War Shafari, War Shafari, Van Shafari, War S

For destroyers, submarines, sloops, corvettes, minesweepers and river gunboats, see Flotilla tables

# DEFENCE FORCES OF THE DOMINIONS

### ROYAL AUSTRALIAN NAVY

Under Control of the Australian Naval Board.

ģ.	Tor- ment pedo Speed (war) tubes	88	38	989	97
	Speed	Haots 314	क्ष	क्र	<b>8</b>
	Tor- pedo tubes	00		21,	<u>ô</u>
Armament	Guns	8 g-in., 8 4-in. A.A.,		: 1	pult, 2 aircraft. 8 6-in., 8 4-in. 4.4., 4 3-pr., 8 t., 2 k.
Armour	Gun posi- tion	ij			
Am	Belt	ij			∞   I
	Coeff	લ્વ	1,941,960	1,459,117	
	Date of com- pletion	1828	1929	1836	1922
	Date of launch	1927	1928	1934	1918
	Maker of Date Date engines of of launch completion	Brown	Beardmore 1928	Devonport Beardmore 1934	Sydney
	Where built	Brown	Dalmuir	Devonport	Sydney
Horse-	power. Type of machinery and boilers	ı	(6). Y	72,000 P.T.	(G.) 25,000 P.T. Y.
	Draught	ft. in. 16 3	17 0	15 8	15 10
	Beam (ex- treme)	ft. in. 68 4	0 98	8 8	50 1
	Length (ex- treme)	ft. 680	88	282	403 <del>1</del>
Stand-	place place need	tons 9870	0886	7000	6100
	NAME	Amstralia	Shropshire	Hobert (late Apollo)	Adelaide
	Class	Kent	London	Nodified Leander	Class Adelaide Type Cruiser

For destroyers, see Flotilla Tables, page 259.

Stoops.—Warrego (1940), Swan 1936), 1,060 tons, 164 knots, 3 4-in., 1 m.m.

Frieattra.—River Class, Barloo, Gascoyne (1943), 1,445 tons, 20 knots, 2 4-in.

Frieattra.—River Class, Barloo, Gascoyne (1943), 1,445 tons, 20 knots, 2 4-in.

Kriswa.—Bathurat Class. Barloo, Gascoyne (1943), 1,445 tons, 20 knots, 2 4-in.

Krisma, Deloraine, Dubbo, Echuco, Fremantie, Gawler, Gedding, Genditon, Glasstone, Glassie, Goulburn, Gympie, Horshan, Inversil, Inversil, Junes, Kalgoorlie, Kapunda, Katoomba, Kisma, Latrobe, Launceston, Lismore, Lithgow, Maryborough, Mildura, Parkes, Frire, Rockhampton, Stawell, Strahan, Tanworth, Toowoomba, Townsville, Wagge, Warmann-bool, Whyalls, Woolongong (1940-43), 60-in0 tons, 16 knots, 1 4-in., 2 or 8 Ocrlikon.

Boow Detence Vessers.—Fairmile Trye, 36 in number. 6 others.

Boow Detence Vessers.—Roals and Kangaroo (1940), 770 tons, 11 knots, 1 12-pr.; Kookaburra (1939), 577 tons, 94 knots, 1 12-pr.

Market Reserve (1937), 3,155 tons gross, 11 knots, 2 4-in, 1 12-pr.; Kookaburra (1839), 577 tons, 1 12-pr.

Tross.—Tancred Sprightly (1942), 570 tons, 1 3-in.; Reserve (1943), 750 tons, 1 3-in.; Reserve (1943), 1,645 tons.

SALVAOR VESSER.—Cambrian Salvor, Caledonian Salvor (1943), 1,645 tons.

**◄** Digitized by

#### AIRCRAFT CARRIERS AND CRUISERS ROYAL CANADIAN NAVY

					Horse-						Armour	our	Armament			
NAME	Stand- ard dis-	Length (ex-	Beam (ex-	Draught	power. Type of machinery	Where	Maker of of	Date	of com-	Cost.	Belt	Gun		Tor- Com-	7	-mo
	place- ment	treme)	treme)		and boilers		engnes	launch	tion		Deck	tion	SIND	tupes	name of the second	ient ient
	tons	ft. 492	ft. in. 69 6	ft. in. 28 6					1942-	33	.ij	ii.	- 4-in.		knots	
								3 =	3 =							
Prince David	7000	382	57 0	21 0									- 4-in.		54	241
Prince Henry Prince Robert				: :												
Uganda *	8000	555 <del>1</del>	0 29	16 6	72,000	Vickers	Parsons	1941	1943				9 6-in., 8 4-in. A.A., 6 21" 32	6 21	33	
Ontario		2			""			Bldg.								

or Destroyers, see Flotilla Tables, page 259.

FRIGATES.—River Class (1942–43), 1,445 tons, 2 4-in. H.A., 20 knots; Annan, Antigonish, Beaconhill, Buckingham, Cap de la Madeleine, Cape Breton, Capiland, Carleton, Carleton, Carleton, Capiland, Carleton, Carleton, Capiland, Carleton, Capiland, Carleton, Capiland, Loch Alvie, Loch Alvie, Loch Matane, Monnow, Montreal, Nadur, New Glasgow, New Waterford, Orkney, Outremont, Penethrig, Port Colborne, Poundmaker, Prestonian, Prince Rupert, Ribble, Rivalmount, Runnymede, St. Catharine's, St. John, St. Pierre, St. Stephen, St. Thomas, St. Therese, Sea Giff, Springhill, Stettler, Stone Town, Strathadam, Sussexvale, Swansea, Teme, Thetford Mines. Toronto. Victoriaville, Waskesiu, Wentworth.

Corvertes.—Flower Class (1941—43), 950 tons, 164 knots, 1 4-in.: Agassiz, Alberni, Algoma, Amherst, Armprior, Arrowhead, Arvida, Asbestos, Atholl, Baddeck, Barrie, Battleford, Beauharnois, Belleville, Bittersweet, Bowmanville, Brandon, Brantford, Bronte, Buctouche, Calgary, Camrose, Chambly, Chiccutimi, Chilliwack, Cobolt, Cobourg, Collingwood, Coppercliff, Dauphin, Dawson, Drumheller, Dundas, Dunvegan, Edmunston, Eyebright, Fennel, Fergus, Foresthill, Fredericton, Frontenac, Galt, Guelph, Halifax, Hawkesbury, Hapatica, Hespeler, Humberstone, Huntsville, Kamloops, Kamsack, Kenogami, Kincardine, Kitchener, Lachute, Leaside, Lichbridge, Lindsay, Longbranch, Lousburg, Lawnburg, La Madbaie, Matapedia, May Daptimin, Dawson, Drumheller, Dundas, Dunvegan, Edmunston, Eyebrigue, rengen, rengen, Lethbridge, Lindsay, Longbranch, Lousburg, Luvenburg, Lavenburg, Lavenburg, Lavenburg, Lavenburg, Lavenborgh, Edmino, Monco, M

MINESWERPERS.—Alarm Class (1943), 850 tons, 1 4-in., 4 Oerlikons: Border Cities, Castle Harbour, Clinton, Fort Frances, Kapuskasing, Middlesex, New Liskeard, Oshawa, Portage, Providence, Rockeliffe, St. Boniface, Sault, Ste. Marie, Wallaceburg, Winnipeg.

Madified Bangor Class (1942), 590 tons, 16 knots, 112-pr., 1 Oerlikon: Brockville, Digby, Esquimalt, Granby, Lachine, Melville, Noranda, Transcona, Trois Rivieres, Truro.

Bangor Class (1940-42), 672 tons, 1 4-in., 16 knots; Bayfield, Bellechaise, Blairmore, Burlington, Caraquet, Chignecto, Clayroquot, Courtenay, Cowichan, Drummondville, Caradran, Fort William, Gananoque, Georgian, Goderich, Grandmere, Guysborough, Ingonish, Kenora, Kentville, Lockeport, Mahone, Malpeque, Medicine Hat, Milltown, Minas, OMirimichi, Mulgrave, Nipigon, Outarde, Port Hope, Quatsino, Quinte, Red Deer, St. Ann, Sarnia, Stratford, Swift Current, Thunder, Ungava, Vegreville, Wasaga, Westmount.

Motor Minesuveepers (1942), 105 feet, 10 knots: Coquitlam, Cranbrook, Daerwood, Kalamalica, Llewellyn, Lloyd George, Revelstoke, Rouland, St. Joseph. Motor Winesuveepers (1943), 126 feet, 10 knots.

Minesuveeping Travelers.—Comox, Nandose, Gaspe and Fundy (1938), 668 tons, 12½ knots, 14-in.

Auxiliary Minesuveepers. Rayon Dor, Reo II, Ross Norman, Standard Coaster, Star XVI, Suderoy IV, Suderoy V, Suderoy VI.

Auxiliary Minesuveepers. Rayon Dor, Reo II, Ross Norman, Standard Coaster, Star XVI, Suderoy IV, Suderoy VI.

Armed Yachts.—Beaver, Caribou, Cougar, Elk, Grizzly, Husky, Moose, Reindeer, Renard, Sans Peur, Vison, Wolf.

ICEBREAKERS.—Ernest Lapointe (1941), 1,179 tons gross, 14 knots; Lady Grey (1906), 1,080 tons, 14 knots; M.B. McLean (1930), 5,000 tons, 16 knots.

TUGS.—Ocean Eagle (1919), 420 tons gross, 114 knots.

OLERS.—Dundalk, Dundrum, Moonbeam, Sunbeam.
Store Carriers.—Preserver, Provider. TRAINING SHIPS.—Saguenay (1930), ex-destroyer, Skidegate.

#### ROYAL INDIAN NAVY

Stroops.—Wren Class (1943), 1,250 tons, 6 4-in.; Cauvery, Godavari, Junna, Kistma, Narbada, Sutioj; Hindustan (1930), 1,190 tons, 2,000 H.P., 164 knots, 2 4-in., 4 3-pr., 10 smaller guns; Clive (1920), 2,021 tons, 1,700 H.P., 144 knots, 2 4-in., 2 2-pr., 4 3-pr., 2 2-pr. guns; Lawrence (1919), 1,269 tons, 1,900 H.P., 15 knots, 2 4-in., 4 3-pr., 2 2-pr. guns; Lawrence (1919), 1,269 tons, 1,900 H.P., 17 knots, 3 4-in., 4 3-pr., 2 2-pr. guns.

Cornwrline (1917), 25,500 H.P., 17 knots, 1 4-in. A.A.

Mixesweepers,—Bargor Glass (1941, 22), 672 tons, 16 knots, 1 4-in. A.A., 1 0erlikon; Assam, Baluchistan, Bengal, Bombay, Carnatic, Kathiawar, Kwyber, Konkan, Kumaon, Madras,

Orissa, Oudh, Punjab, Rafputana, Rohilkhand, Sind.
Trawness.—(1941—42) Agra, Allahabad, Ahmedabad, Ambala, Amritsar, Barisal, Baroda, Benares, Benar, Bihar, Calcutta, Cawnpore, Chittagong, Cochin, Cuttack, Decca, Trawness.—(1941—42) Agra, Allahabad, Ahmedabad, Ambala, Amritsar, Barisal, Patna, Peshawar, Poons, Quetta, Shillong, Sialkot, Sylhet, Trawncore, Trichinopoly, Dinapur, Gaya, Jubbulpur, Karachi, Lahore, Lucknow, Madura, Monghyr, Multan, Nagiku, Nagik, Petna, Peshawar, Poons, Quetta, Shillong, Sialkot, Sylhet, Trawancore, Trichinopoly,

SURVEXING VESSEL. -Investigator (1907), 1,172 tons, 1,137 H.P., 13 knots.

### ROYAL NEW ZEALAND NAVY

igitize		Stand				Horse-				Date		Arm	Armour	Armament		3	
Class	NAME	ard dis-	Length (ex- treme)	Beam (ex- treme)	Draught	Type of machinery	Where	Maker of Date of of launch	Date of launch	of com-	Cost.	Belt	Gun posi-	Guns	Tor- pedo Spe	9	Com- ple-
,		ment				boilers				tion		Deck	tion		tubes		War
		tons	ft.	ft. in.	ft. in.		:		000,	100	43	in.	in.		1 0	knots	1
eander	Achilles	1030	5543	25 8	16 0	72,000	Cammell	Cammell	1932	1933		7.		(Toander 8 4-in	100		0.00
	Leander	7270		55 2	**	"	Devonport	Vickers .	1931	1933	1,667,819			A.A.), 1 aircraft.			
Fiji	Gambia	8000	5553	62 0	16 6	72,000	Swan	Wallsend	1940	1942				12 6-in., 8 4-in., 16 6	9	32	

FRIGATE.—Arabis (1943), 950 tons, 16½ knots, 1 4-in. MOTOR LAUNCHES.—Fairmile Type, 12 in No., 16 others.

## SOUTH AFRICAN NAVAL FORCES

TRAWLERS.—Castle Class (1943), 10 in No.; Isles Class (1941), 6 in No.

# A number of Motor Torpedo Boats, Minesweepers, Coastal Craft and Auxiliaries.

## ARGENTINE REPUBLIC

	Com-		tons 1000 556 + 60	900	•	0 515	0 430	4200 1175	
		75	tons 1000			1000	1000	420	•
	Speed		knots 30	33	2	8	8	22.5	:
	səqn	Torpedo	6 21,	21,	:	1	1	2 (sub.)	21.
Armament		Guns	9 6-in., 4 4-in. A.A., 2 3-in., 25 A.A.	2 aircraft. 6 7-5-in. 12 4-in. A.A., 6 Pom Poms, 1 catamult. 2 sea-	_	2 10-in., 8 4.7-in.,	2 10-in., 8 6-in., 4 6-pr., 1 37-mm.	12 12-in., 12 6-in., 4 3-in. A.A 4	1.85-in., 6 M.
	in tion	Secondary	.ii	63	*	9	6 H.S.	6	=
	Gun position	Heavy	ii.	ÇI		9	6 H.S.	12-9 K.S.	2
Armour		Side above Bulk- belt head	ii.			9	5 H.S.	9	:
Αш		Side above belt	ij			9	6 H.S.	9-6	:
		Deck	ë.	н	2	14	17	3-2	2
		Belt	a ii.	က		J.	H.S.	12-10 K.S.	
	Cost		£ 1,750,000 approx.	1,250,000	2	696,700	782,000	2,200,000	
noi	omplet	Date of c	1937 1938	1931	2	897 1899	1901	1911 1915	1914
ч	laune!	Date of	1937	1929 1931	2	1897	1898 1901	1161	
	Where huilt		Vickers, Barrow	Genoa	Leghorn	Leghorn	Sestri Ponente	Camden, N.J.	Quincy,
Ç19	power. nachin ersilers	i to ogyT	54,000 P.T.	(G.) Y. Y. (G.)	: :	13,000	13,000 R.	45,000 *	(G.)
	gpt	Draw	ft. 16	161		24	24	88	r
	gp		ft. ft. 56 16	58 164 1		59\$ 24	593 24	973 28	"
(91	Ream								
	Ream	Digaid  Digase I	ft. 56	88	:	593	203	973	
	extrem	ned2 Blqzi(I ) ddgneA	ft. ft. 535 56	5451 58	nco de ,, ,, ,,	328 591	328 59\$	585 973	

COAST DEFENCE SHIFS.—Libertad and Independencia, 2,510 tons, 13 knots, completed at Birkenhead in 1891–93, and converted to oil fuel in 1927, carry 2 9-4-in., 4 4-7-in., 4 3-pr. guns, RIVER GUNSOANS.—Parana and Rosario (Elswick, 1908), 1,055 tons, 2 6-in. howitzers, 6 3-in., 2 L., 15 knots.

TRAINING SHIP (cruiser).—Presidente Sarmiento (Birkenhead, 1896), 2,320 tons, 15 knots, 3 4-7-in., 1 4-in., 2 3-pr., 3 torpedo tubes.

SURVEXING VESSELS.—Comodoro Rivadavia, ex.San Juan, Bahia Blanca ex.San Luis (Hawthorn Leslie, Newcastle, 1928), 790 tons, 1-3-in., 12 knots, Alferez Mackinlay (1914), 783 tons, + Converted to oil burning and armament altered in 1929. Used as training ships Moreno and Rivadavia were converted to oil burning and fitted with geared turbines in 1928. 2 1.5-in. A.A.

10 knots.

SLOOPS.—Murature, King (building), 1,000 tons, 4,000 B.H.P., 16 knots.

TUGS.—Mataco, Toba (completed 1928, at Messrs. Hawthorn Leslie's, Newcastle), Azapardo (1919), Ona, Querandi (Thornycroft, 1914), and 9 others.

Ministry Comodoro Py, Bouchard, Drummond, Granville, Parker, Robinson, Seaver, Fournier, and Spiro (1937–38); 550 tons, 2,000 H.P., 16 knots, 2 3-9-in, guns; Bathurst, Golondrina, Pinedo, Segui, Thorne (ex-German, 1917), 500 tons, 17 knots, 3-in, ministro Pere (1927), and Florintino Ameghino.

Ournes, Dato D.W.: Ministro Ezcurra (1914), 104 knots; Ministro Free (1927), and Florintino Ameghino.

Taxasporra.—Chaco, Pampa (ex-Rio Glavo) (1923), 2,100 tons, 11 knots; Patagonia (1925), 9½ knots; I de Mayo; Ushuaia, 1,350 tons, 12 knots.

A number of Cruisers, Destroyers and Submarines are projected.

For Destroyers and Submarines are projected.

	Sen-	ment	98	٤ :	<del>3</del>	<u>.</u>
	පි		tons		8	
	Speed Oil		rnots 21	2	2	:
		t obeqroT	1		<b>4</b> ⊈€	:
Armament		Guns	12 72-in., 14 4·7-in., 4 3-in. A.A.; 2	3-pr., 41-5-in. M., 8 A.A. M.G.	10 4·7-in., 4 3-in., 4 3-pr.	13
	noi ion	Secondary	ig ο Ν	•		
	Gun position	Heavy	'력 ^정 및	:		
mo		Bulk- heads	ėj o	:		
Armour		Side above Belt	ii g	:		
		Belt Deck	ij0	2	#	•
		Belt	ig g	:		
	Ç		1,821,400			
noi	peldmo	Date of co	1909 1910	8061808	1909 1910	•
τ	launel	lo ste O	1906	1908	1908	:
		Where built	Elswick	Barrow	Elswick	
Ľ.	ower. schine oilers	I-esroH m lo eqyT d bns	25,000	; ;	22,000 B.C.T.	; } 
	3t	Draug	33.25	:	13	•
		H see	#3		8	
(6		Length (e	<b>₹</b> 4	:	4014	:
	bral Justne	onestS configsib	tons 19,200	2	3150	:
	!	AME	Minas Gerais *	São Paulo *	†Bais	l.cr. †Rio Grande do Sul
		Class	ف	م	l.cr.	l.cr.

* Reconstructed and converted to oil fuel, 1934-39, 1937-40 respectively.

* Reconstructed and converted to oil fuel, 1884-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-39, 1987-

† Reconstructed, including conversion to oil fuel, at Rio de Janeiro, 1926.

RIVER MONTORS.—Pernambuco, 470 fons, 11 knots, built at Rio de Janeiro (1910), 2 47-in., 2 3-pr. guns; Parnahiyba, 600 tons, 180½ feet in length, 12 knots, 1 6-in. gun, 2 8-4-in.; 3 8-4-i

TRAIL TRAIL

SURVEX VESSELS.—Rio Branco, 895 tons, 15 knots, 2 6-pr.; Jose Bonifacio, 1,300 tons, 9 knots, 2 4-in., 2 6-pr. Jacquay, 800 tons, 16 knots.

SUBMARINE CHARSERS.—Guaiba, Guaporé, Gurupi (1942-43), 335 tons, 25 knots; Javarí, Jurdaí, Juruena, Jaguarso, Jaguarso, Jaguaribe, Jacui, Jundiai (1942), 100 tons, 20 knots, 1 3-in.;

TANKERS.—Novais de Abreu (1918), 10 knots, 500 tons; Marajo (ex-Malistan, 1924), 5,553 tons gross, 10 knots; Poteng; (1938), 600 tons, 10 knots.

OCEAN-GOING TUGS.—Laurindo Pitta (1910), 514 tons, 850 H.P., 11 knots; Annibal Mendonca (1919), 1,200 H.P., 12 knots, 2 S-pr.; Heitor Perdigao, Muniz Freire, Lomba (1924), 200 tons, 850 H.P., 11 knots, 2 3-pr.

LIOHTSHIP TEXDERS.—Lahmeyer, Mario Alves, 280 tons.
TRAWLERS.—Barreto Menezes, Filipe Camarao, Fernandes Vieira, Henrique Dias, Matias de Albuquerque, Vidal de Negreiroe (1941), 124 knots.

For Destroyers and Submarines, see Flotilla Tables.

	٠.	<del>42</del>	_	_	<b>~</b>	1
	를 <mark>급</mark>		<u> </u>	<b>\$</b>	880 880	
	d Puel	동	2 - 000 - 000 - 000		'	
	Spee		knots 23		23.	
	seqn	Torpedo t	(aub.)	2 18	2 18	
Armament		Guns	10 74-in., 14 6-in., 44-in., A.A., 47-8- in., 1 catapult.	6 6-in., several smal-	2 8-in., 8 6-in., 4 3-	8-in.
	in tion	Secondary	ë. 9			
	Gun position	Heavy	in. 10			
Armour		Side above Bulk- Belt head	ii.			
ЧΨ		Side above Belt	ii 4			
		Belt Deck	ii. 4		1	
		Belt	Į.			
	<del>1</del>		ઝ			
noi	omplet	Date of c	19181915	1898 1891	1893 1894	
q	ounel 1	to exact	1918	1886	1883	
		Where built	Elswick	Elswick	Elswick	Projected
Ç19	power. machin steliou	esroH to eqyT f bns	37,000 P.T. Y.	15,500	14,500	
	gpt	prat (	ft. in. 29 0	17 0	19 6	
	Ream		ft. in. 92 6	46 6	46 6	
(91	extrem	) Algne.I	ft. 661	380	370	d.d.
	bzab inəməs		tons 28,960	3417	3435	10,000
	NAME		Almirante Latorre * (ex-H.M.S. Canada)	Chacabuco	Blanco Encalada †	Cruisers (two)
	٤		è	g Dia	<b>ម</b> itized	ti hv

* Fitted with bulges, converted to oil burning, and modernised in England (completed 1931).

† Training ship.

OTIERS (ATRISTORDS, 1930).—Maipo, Rancagua, 3,080 tons displacement, 2 4.7-in. guns.
SUBMARINE DEFOR SHIP.—Araucano (Vickers-Armstrongs, Barrow), completed 1930, displacement 5,890 tons, armament 2 4.7-in., 2 3-in. A.A., speed 13 knots, H.P. 2,500, 1 seaplane.
SUBMARINE DEFOR SHIP.—Araucano (Vickers-Armstrongs, Barrow), completed 1930, displacement 5,890 tons, 2 knots.
TRANSTORT.—Argunos, 3,800 tons, 12 knots; Abtao (1912), 69 tons, 10 knots.
TRANSTORT.—Argunos, 3,800 tons, 14,11, 10,265 tons, 12 knots; Micalri (1925), 850 tons, 9½ knots; Elicura, Leucoton, Orompello (1919), 530 tons, 14½ knots, 2 &in. guns; Yeloho (1906), tons, 12 knots, 145 tons, 9 knots.
Tross.—Janequeo, Galvarino, Colocolo, Sobenes, Cabraces (1930), 790 tons, 11 knots; Contramaestro Britto, Pelantaro (1937), 830 tons, 12 knots; Piloto Sibbald (1916), 1,100 tons, 17 knots.—Janequeo, Galvarino, Colocolo, Sobenes, Cabraces (1930), 790 tons, 11 knots; Contramaestro Britto, Pelantaro (1937), 830 tons, 12 knots; Piloto Sibbald (1916), 1,100 tons, 12 knots.

467

TRAINING SHIPS.—Lautaro (1920), 3,185 tons gross; General Baquedano (1898), 12 knots, 4 4.7-in., 4 6-pr. 114 knots.

For Destroyers and Submarines, see Flotilla Tables.

	ė v	<b>a</b> 1	<b>10</b>	20	ı
	18 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8		250 250 250 250 250 250 250 250 250 250	250 275	,
	Fuel Speed Coal	ē	30 24 4		
	Spæ		knots 17-0	16-0	;
	npea	t obeqroT	(gb.) 18°	(sub.)	
Armament		Guns	10 5.9-in., 2 2.4-in., 8 m.g., 10 .78-in. A.A.	2 9.4-in., 4 5.9-in., 8 3-in., 2 1 45-in., 4 .78-in. II., 2 II.	
	tion tion	Secondary	.다. 8. 8.	6 K.8.	
	Gun position	TVaeH aung	ij	K.B.	.088
Armour		Bulk- head	ii.		ised
Am		Side above Belt	ij		† Modernised 1990.
		Belt Deck	.gi 🕫	61	]=
		Belt	.i. <b>%</b> ii.	7:	
	į	3	3		
uo	poldu	Date of co	19181923	1908 1909	
	donnal	lo ets (	1918		-   ,
		Where built	Copenhagen	Copenhagen	Under the control of Germany.
æ	schiner	q-estoH nn to eqvT od bns	5500		er the cor
	14	gusta	ft. in. 15 9	16 3	• Und
		Beam	ft. in. 1	7 51 6	
	(emei)	re) digns.l	ft. in. ft. i	286 7	
	bre tnem	ibnat8 eosiqsib	\$800 3800	3200	
		NAME	Kiels Inel ↑	c.d.s. Peder Skram	
		Class	ម	c.d.s.	tized by

MINIELAXEES.—Lossen, 640 tons, 12 knots, 2 3-in., 2 a.a. guns, 175 mines; Sixtus and Kvintus, 186 tons, 8 knots, 2 1-pr. guns, 60 mines; Steamboat A, 96 tons, 7 knots, 2 k.o.; MINESEVEEPERS.—Springeren, Storgen, Sordderen, Sohunden, Harhesten and Narhvalen, 110 tons, 24.3 knots, 2 24-in. guns, 1 torpedo tube; Soloven, Sobjernen, Soulven, 270 tons, 18 O Lindormen (1941), 500 tons, 14 knots, 2 3-in.

CORVETTES.—Hvalrossen, 169 tons, 263 knots, 13-in. gun, 4 18-in. torpedo tubes; Makrelen, Nordkaperen, Havkatten, and Saelen, 110 tons, 24-3 knots, 2 24-in. guns, 4 18-in. torpedo knots, 2 3-in. Ex-torpedo boats. tubes. Ex-torpedo boats.

SURVEXING VESSELS.—Hejmdal, 705 tons, 12½ knots, 2 3-in. guns, 4 '71-in. a.a.; Ternen, 80 tons, 11-46-in.; Frejs (1940), 815 tons, 10 knots.

SURVEXING VESSELS.—Hejmdal, 705 tons, 12½ knots, 2 3-in. guns, 4 '71-in. a.a.; Ternen, 1 inch jörnen, 1,080 tons, 14½ knots, 2 34-in. guns, 1 strenst PROTECTION VESSELS.—Ingelf, 1,180 tons, 124-in. gun; Maagen, 110 tons, 8 knots, 1 11½-in. gun; Aegir, 500 tons, 14 knots, 2 6-pr.

2 3-in. 2 14½-in. guns, 1 8eskytteren, 415 tons, 11 knots, 1 2½-in. gun; Maagen, 110 tons, 8 'f knots, 1 Middegrunden, Fremsd, Kongedybet, 4 Icebreaken. 3 Cable Ships.

DERFORM SHIP.—Hekil, Grossund, Fven.

REFAIR SHIP.—Henrik Gerner (1928), 463 tons, 13 knots, 2 3-in.

ROYAL YACET.—Dannebrog (1882), 1,130 tons, 14 knots.

For Torpedo Boats and Submarines, see Flotilla Tables

## FRANCE.—BATTLESHIPS

	Com-	ment	1500		1400	=	21.0 2600 1190	300 1068	300 1167
	Fuel Coal	Oil	tons 6000	2			2600	164	000
	Fuel Speed Coal		knots tons about 6000 1		291	:	21.0	20.0	213
- 0		Torpedo t						(sub.)	
Armament		Guns	8 15-in., 15 6-in.,	guns, 2 catapults, 4 aircraft.	8 13-in., 16 5.1-in.,	in., 32.5 kr, 1 cata- pult, 4 aircraft.	10 13.4-in., 14 5.4-in., 8 3-in, 4.4., 5 3-pr., 2 1-pr., 2 L., 4 seaplanes, 1 cata-pult.	n. 22 5.4-in., n. A.A., 2 7-	813.4-in., 145.4-in., 83.9-in. a.a., 547. mm. a.h., 27-pr., 2 L., 2 aircraft, I catapult.
4	ion	Secondary	ij				7 x.S.	7 K.S.	7 X.S.
	Gun position	Heavy	ig.		13.8	:	10 <del>1</del> K.S.	104 K.S.	10½ K.S.
our		Bulk- bead	.ij				7 K.8.	F.S.	7 K.S.
Armour		Side Deckabove Bulk- Belt head	ii.				7 K.S.	F.8.	K.S.
		Deck	·i. ∞		6-4	:	11-7 2 <del>2</del> -1 <del>2</del>	11-7 22-12 K.S.	22-13
		Belt	in. 9–16		10-8		11-7 K.S.	11-7 K.S.	11-7 K.S.
	Cost		3			5,200,000	1913 1916 2,589,000	1912 1914 2,603,920	1913 1916 2,642,439
uoi	ombjet	Date of c	1939 1940	1939 1943	1936 1938	1935 1937	1916	1914	1916
Ч	f launc	Date o	1936	1938	1936	1935	1913	1912	1913
		Where built	Brest	St. Nazaire	St. Nazaire	Brest	Lorient	La Seyne	St. Nazaire
(Te	-power, machin boilers	Ho eqtT fans			100,000	r.1.(G.)	43,000 P.T. I.	28,000 Nic. P.T.	42,000 B. P.T.
	4q8	Drau	ft. in. 26 7		25 0	*	32 0	32 6	0 28
	Beam		ft. in.	2	0 101 8	2	988	95	988
(8		o) dagnaal	ft. in. ft. 794 0 108		702 01	:	544 6	551 0	544 6
	brabı dnəmə		tons 35,000 7	*	26,500 7	s .	22,189 5	22,189 5	22,189 5
	NAME		Richelieu †	Jean Bart	Strasbourg *	Dunkerque *	Provence *	Paris •‡	Lorraine ‡
	2888		غ	Ġ.	b.c.	b.c.	فه zed by GC	odle	بغ

† Operated by the Allies.

* Scuttled at Toulon, 27 November, 1942.

‡ Reconstructed and modernised between 1923 and 1935.

AIRCRAFT CARRIERS

										Date		Armour	our	Armament	1			
Class	NAME	Standard Length displace (ex- ment treme)	Length (ex- treme	Beam )		Draught	Horse- power	Where built	Date of launch	of com- ple- tion	Cost	Belt	Gun posi- tion	Guns	Tor- pedo tubes	Speed	Fuel	Compleant ble-
A.C.	Bearn *	tons 22,146	ft. in. 599 0	ft. in.		ft. in. 30 6	37,200 Tur. & R.	La Seyne	1920	1928	વર	i.i.g. Ei.	i.	8 6.7-in., 6 3-in. A.A., 8 7-pr., A.A., 12 M. A.A., 41 planes.	4 21.7"	knots 21.5	tons 2070	875
Aircraft Frans-	Commandant Teste	10,000	548	88	1-	52 9	21,000	Bordeaux	1929	1932		14		12 3.9-in. A.A., 8 3-pr. A.A., 12 M., 19 planes, 4 catapults, 5 cranes.		20.5		648
oy (2)	(Ex-H.M.S. Biter)		492 (	69 0	9	28 6				1942				- 4-in.				
ogle	* Originally designed and laid down	ed and laid	l down	as a batt	tleship	; recor	as a battleship; reconditioned 1935.	tioned 1935. + Sch    Scuttled at Toulon, 27 November, 1942.	7 Nover	+ i	Schneider-Z	oelly tu	rbines	+ Schneider-Zoelly turbines (G.). Yarrow-Loire S.T. boilers, 1942.	T. boile	ers.		

+ Schneider-Zoelly turbines (G.). Yarrow-Loire S.T. boilers. || Scuttled at Toulon, 27 November, 1942.  $\boldsymbol{\ast}$  Originally designed and laid down as a battleship ; reconditioned 1935.

### FRANCE.—CRUISERS

		Standard							Date			Arr	Armour	Armament			Fuel	Com-
Class	NAME	displace- ment	(ex- treme)		Beam	Draught	Type of machinery and boilers	ry Where built launch	of launch	com- ple- tion	Cost	Belt	Gun posi- tion	Guns	Tor- pedo tubes	Speed	Oil	ple- ment
Training	Jeanne d'Arc	tons 6496	ft. i 557	in. ft	ft. in. 57 5	ft. i 18	in. 8 32,500	St. Nazaire	1930	1931	લ્સ	i.	ii.	8 6.7-in., 4 3-in. A.A., 2 7-5-in., 2 M., 2 seanlance 3 ceta.	21.7*	knots 26	tons 1400	506
Improved La Galis-	De Grasse *	8000						Lorient	Bldg.					pults. 9 6-in., 6 3-9-in. A.A., 8 M. A.A., 2 aircraft.	21,			
La Galis-	La Galissonnière	7600	589	0 5,	57 4	17	5 84,000	Brest	1933	1935		44	Deck	96-in., 83.5-in. A.A.,	4	31	1500	540
ommore.	Jean de-Vienne †	33		_	,,	"	(5) °	Lorient	1935	1936		**		planes, 1 catapult.	(D.)	2 %		1
	Marseillaise +	**	"	_	"	,,	"	St. Nazaire	1935	1937		"	"	" "	1			
	Gloire	**	.,,	_	**	*	,,	Bordeaux	1935	1937		"	n			915	1776	1
	Montcalm		"		33		**	La Seyne	1935	1937		2	"					
	Georges Leygues	4	"	_	"	*	25	St. Nazaire	1935	1937							1	3
1	Algérie +	10,000	610	8	65 8	23	0 84,000 (G.) Pen.	Brest	1932	1934	1,920,000	about 4	Э 3		8 21, (T.)	31	1900	746
Suffren	Dupleix	10,000	636	9	63 6	24 (	000'06 0	Brest	1930	1932	1,570,000			planes. 88-in., 83-5-in. A.A.,		32	1800	605
Class	Foch +	"	"		"	*	Kat. (G.)		1929	1931	1,450,000			6 7.46-in., A.A., 12 M., 3 seaplanes, 2	(T.)			
	Colbert †	"	*		*	"	*	2	1928	1931	1,270,000			catapults.				
	Suffren ‡	10,000	643	0	65 0	24 (	0 90,000 Rat. (G.) G.	Brest.	1927	1930	1,210,000			8 8-in., 8 3-in. A.A., 8 7-40-in., A.A., 12 M., 3 seaplanes, 2 cata-	21, (T.)	32	1800	605
Duquesne	Tourville	10,000	626	8	62 4	23	0 120,000	Lorient	1926	1928				88-in., 83-in. A.A., 8	9	33.5	2000	620
_	Duquesne +		"	_	"	*	Rat. (G.)	Brest	1925					7.46-in., 2 sea- planes, 1 catapult.	(T.)			

			1
578		220	_
1480		1800	
34		34.0	
12 21.7"	(T.)	21.7"	a.w. (T.)
.  8 6.7-in., 4 3-in. A.A.,   12   34   14   2 3-pr., 4 M., 1 L.,   21.7"	1 seaplane, 1 cata-	Deck 96-in., 43.5-in. A.A., 200 21.7" 6 34.0 1800 5	mines, 8 M., 1 catapult, 2 aircraft.
_	_	Deck	_
:		:	
:		:	
1923   1926	1924 1926	1934	
1923	1924	1933	
Brest	Lorient	52 0 16 4 102,000 St. Nazaire 1933 1934	
110,000	F.T.(G.) G. Lorien	102,000	P.T.(G.) Pen.
8		3 4	
~		1	
57 6		52 0	
10		6	+
594		5886 580	
7249   594 10 57		5886	
-	Trouin Lamotte Picquet	Emilé Bertin	
nonav-	Trouin		(T)

† Scuttled at Toulon, 27 November 1942. # Operated by the Allies.

RIVER GUNBOATS.—Francis Garnier (1929), 639 tons, 15 knots, 2 4-in., 1 3-in. A.A.; Vigilante, Argus (1924), 218 tons, 12 knots, 2 3-in., 2 1-pr.; Bally (1921), 201 tons, 14 knots, 1 3-in., 2 1-pr.; Mytho, Tourane (1934), 95 tons, 250 H.P. (Diesel), 10 knots, 1 3-in., 2 1-pr.; Avalanche and Commandant and the Lagree (1909), 128 tons, 16-5 knots, 1 3-in. gun, 2 1-pr.; No. 1 (1925), 38 tons, 9 knots, 1 1-5-in.

MINESWERERS.—Engageante and Diligente + (1917), 315 tons, 144 knots, 2 3-9-in.; Etourandant Duboc + and Commandant Riviere, 630 tons, 20 knots, 2 3-9-in.; Elan, 2 3-9-in.; Granti (1919), 354 tons, 125 knots, 1 9-pr.; Commandant Duboc + and Commandant Comm

DESPATCH VESSEIS.—Enseigne Henry, Dubourdieu (1919–1920), 453 tons, 17 knots, 1 5-4-in., 1 3-9-in. "Arras "Class:—Calais, Lassigny, Epinal,† Coucy,† Amiens,†
Tahme, Arras,† (1919–1923), 644 tons, 20 knots, 2 5-4-in., 1 3-in. A.A., 2 M. "Aisne "Class:—Ailette, Yser, Somme, Marne (1917–1918), 490–600 tons, 21 knots, 4 3-9-in. guns, 1 3-in.

Tahme, Arras, "Class:—Calais, Lassigny, Epinal,† Coucy,† Amiens,†
NET-LAYER.—Le Gladiateur (1934), 2293 tons, 370 ft. 8 in. long, 7,700 H.P., 21 knots, 4 3-5-in. A.A., 6 M.

NET-LAYER.—Amiral Mouchez, 719 tons, 12 knots, 2 3-5-in.; La Perouse, 780 tons, 11 knots, 3 Astrolabe, Octant, and Gaston-Rivier (1918), 315 tons, 10 knots, 1 1 8-5-in.; Constant and Gaston-Rivier (1918), 315 tons, 10 knots, 1 1 knots, 3 Astrolabe, Octant, and Gaston-Rivier (1918), 315 tons, 10 knots, 1 1 knots, 2 18-in. 7.7.; V.T.B.'s 1 3-in. gun. 7.7.; V.T.B.'s, 11-12, 45 knots, 28 tons, 2 18-in. 7.7.; V.T.B.'s, 12-27, 37 tons, 4 18-in. 7.7.; V.T.B.'s, 11-12, 45 knots, 1 3-in.

[192] Arrayarne Charrers.—Nos. 1-4 (1935), 148 tons, 2,400 H.P., 20 knots, 1 3-in. gun. Nos. 8, 10-15, 112 tons, 16 knots, 1 3-in. PARROL VESSELS.—Primevère, 490 tons, 8 knots; Fauvette II, Passereau II, 315 tons, 10 knots. L'Ajaccienne, La Bonoise, La Toulonnaise, 650 tons, 1 4-in., 6 Trawlers. Reprenentation (1919), 520 tons, 10 knots, 1 3-in. gun; Austral, Boreal, 2,230 tons, 1,200 I.H.P., 12 knots, 1 3-in. gun.
Argurera Supera Sirre.—Belfort + (1921), 644 tons, 20 knots, 1 3-in. gun; Hamelin, 622 tons, 12 knots, 1 3-in. gun; Petrel, 1-4, 6-8, 80 tons, 11‡ knots.
FISHERRY PROTECTION VESSEL.—Quentin Rosseyelt + (1918), 565 tons, 14 knots, 1 3-in.

ARGIARY SUPELY SHEEL.—Belfort † (1921), 044 tolds, 50 millions, 13 knots, 1 3-in.

FISHERY PROTECTION VESSEL.—Quentin Roosevelt † (1918), 585 tons, 14 knots, 1 3-in.

FISHERY PROTECTION VESSEL.—Quentin Roosevelt † (1918), 585 tons, 12 knots, 12 k

TARGET VESSEL.—L'Impassible (1940).
FRET TUGS.—30 in No., 600-1,200 tons, 10-13 knots.
FRIGATES.—Algerien, Hova, Morocain, Senegalais, Somali, Tunisien (1943-44), ex-U.S. Destroyer Escorts. 1,300 tons, 20 knots, 3 3-in. and smaller A.A. guns.

CORVETTES.—7 in No. British Flower Class, Aconit, Commandant Detroyat, Commandant Drogou, Commandant D'Estienne d'Orves, Lobelia, Renoncule, Roselys (1941-42), 925 tons, AFMED MERCHANT CRUISERS.—A number of converted liners of medium tonnage

Motor Launches.—A number of ex-R.C.N. Fairmile Type Launches.

For Destroyers, Flotilla Leaders and Submarines, see Flotilla Tables.

## GERMANY.—BATTLESHIPS

Class NAME NAME Greenend Greenenend Greenend Greenen Greenend Greenen Greenend Greenend Greenen Greenen Greenen Greenen Greenen G	ua	_				_				Armour	Ħ			Armament				
<del></del>	mxe	Beam		-power machin grapiod	Where built	i launci complet	Cost					Gun position	_ g1		1	Speed		88
b.c. Gneisensn § 26,000 (stan-darn land)  b.* Lätsow(ex-Deutsch- 10,000 land)  darn  darn  c.* Admiral Scheer  """  """  """  """  """  """  """	) digasal		Dra	eroH to eqvT bns		o etad o to etad		Belt	Belt Deck a	Side Bulk- above head Belt	Bulk- peed	guns Heevy	Secondary	Guns	d obsqroT	•	IIO	ment
b.* Littaow(cz-Deutsch- 10,000 land)   Land   Cstan- dand day   Cstan- day	ft. in. 741 6 W.L.	- ಚಿಹ	in. ft. i	ii. 8 (G.) & D.	Kiel	1986 1938		ip. 13	·ë &	.gi	. <b>s</b> i	. <b>s</b> i	ii. 9 77-ii 14.4 1.5-craf	11-in., 12 5·9·in., 14 4·7-is. a.a., 16 7·5-is. a.a., 4 air- craft, 2 catapulte.		knots tons	tons	1461
Admiral Schoer		3 67	6 19	0 54,000 -56,800	Deutsche Werke	1931 1933	3,750,000	about 14-3	11	1	_ <del></del> -	about 7	17.4.		21,8	92	3500	965
	* 6	<u> </u>	*	Diesel‡	Kiel Wilhelms- haven	1933 1934	estimated 3,530,000	2	:				catapi craft.	h., 10 M., 1 ult, 2 air-	<del>ુ</del>	:	:	
Schlesien ↑ 12,300	419	0 72 10	28	3 T.S. R.	Schichau	19061900	19061906 1,214,000	4	တ	σο <u>γ</u>	& #	11-6 x.8.	64 4 77-is	4 17-in., 10 5-9-in.		18	1771	787
Schleswig-			-	*		1906 1906		:	:	2	:					:	<u> </u>	=
a.c.   Graf Zeppelin   25,000  820		88 89	8 18	4 180,000	AIRCRAFT 4 180,000 Deutsche Werke 1939 1943	RCRAFT 1938,194	AIRCRAFT CARRIERS rke 1938 1943	I	<u> </u>		_	-	9.591	165-9-in., 104-7-in.,		about		
s.c. Poter Strasser ,,				j : 	Germania Werft	Elde.							<b>4</b>	40 aircraft.		3 :		
* Officially rated as " Armoured Ships."	ed Ship	, .		+ Reconstr	† Reconstructed 1925-30.	Classified	Classified as schoolships.	l g		8 ↔	a sists	ig da	double act	Consists of eight double acting two-stroke M.A.N. Diesels.	M.A.N	Diese	١	ı

§ Reported to be extensively damaged.

## GERMANY.—CRUISERS

		Render	Tenoth	Reem		Horse		\$	Date of		Am	Armour	Armament			Puel	
	NAME	displace (ex- ment treme)	(ex- treme)	-	Draught	Type of machinery and boilers	Where built	of domesh	S S S S S S S S S S S S S S S S S S S	te Co	Bet	Gen tion	Guns	Tor- pedo tubes	Speed	ලි ලි	ple- ment
. 3	Admiral Hipper	tons 10,000	ft. in.	3.5 2.1 11.15	ft. 15 bi.	(G.)	Blohm and	1837	1930	ધ	.gi	.gi	88-in, 13 4-7-in. A.A., 427-in	4.27 -in	knots 32	tops	1000
A	Prins Bugen §	10,000	1, 28	71 3	15 1	(G.)	Germania	1938	1940				sircraft, 1 catapult.	3			
<b>19.</b> 5	Seydlits ex-Lutsow	,	1 .	:	2	*	Deschimag Deschimag	1838	1940								
0	M, N, O and P	7300	584 0	85 8	15 9	80,000 (G.) & D.	Deutsche Werft,	Bldg.					8 5.9-in., 4 4-in., 1 aircraft.	8 27-in.	엻		
Leipzig		9000	581 0	83 5	15 7	72,000 <del>1</del>	•	1929	1831	2,050,000	1		9 5.9-in., 8 3.5-in.	4 triple	83	ı	656
Nürnberg	r.	2	557 9 W.L.	24 0	:	D, 12,000)	Kiel	1934	1935				A.A., O / J-78. A.A., 1 catapult, 2 sir- craft.	B.W.			
M Op		0000	570 10	49 10	17 8	‡000 <b>'</b> 99	Wilhelms- haven	1828	1830	1,785,000	တ		9 5.9-in., 6 3.5-in. A.A., 1 catapult, 2 aircraft.	4 triple 27-tn. a.w.	8	Diegel oil) l500 (in- clud-	285
Emden *		2400	510 2	46 11	17 4	46,500‡ (G.)	Wilhelms- baven	1925	1925		4		8 5.9-in., 3 3.5-in. 2 twin A.A., 4 M. in.	2 twin 19:7-	8	Diesel oil)	88

* Training Ship.

† Three propeller shafts, of which the centre shaft is Diesel-driven and the outers turbine-driven. Diesels used for cruising or combined with the turbines to give full speed. ‡ Parsons geared turbines with Diesels for cruising. § Reported to be extensively damaged.

# GERMANY.—MISCELLANEOUS CRAFT

ESCORT VESSER.—F 1, 4, 5, 8 (1936), 600 tons, 240 feet, 28 knots, 2 4-1-in., 4 1-46-in., complement 103. Probably others, number unknown.

GUNNERY TRAINING SHIPS.—Drache (1906), 790 tons, 15 knots, 4 4-1-in.; Fuchs (1919), 525 tons, 16 knots, 2 3-4-in.; Delphin, Mars, Eduard Jungman, Carl Zeiss.

FISHERY PROTECTION VESSELS.—Weser and Elbe (Wilhelmsbaven, 1931), 560 tons, 1,600 H.P. (Diesel), 15 knots, 1 3-5-in. gun.

EXPRENENTAL VESSELS.—Pelican and Nautilus (500 tons, 17 knots); Strahl, 1,645 tons, 10 knots, 5 Stortebeker and Arkons, 525 tons, 16 knots, 1 4-1-in. gun; Klaus von Bevern (1911),

MOTOR TURFEDO BOATS (" E ") BOATS).—S. 7—17 (1834-38), and S 18—25 (1939), 70 tons, 1 mg. a.a., 2 19-7-in. T.T.; S 28—50 (1839), 86 tons, 106-ft., 36 knots, 2 1-46-in. a.a. others, number unknown. A large number have been destroyed. PATROL VESSEL.—UZ (S) 18, 60 tons, 14 knots.

SUBMARINE CHASERS,—Albatross Class, number unknown.

800 tons, 25 knots, 2 4-1-in.

TENDERS.—Hecht, Gazelle, Frauenlob, 525 tons, 16 knots.; Nordsee, 830 tons, 12 knots; Taucher, 202 tons, 6.6 knots; Hai, Konigen Luise, 600 tons, 28 knots, 24-1-in.; Taku (1919),

SALING TRAINING SHIPS.—Gorch Fock (Hamburg, 1933); Three-masted barque, 239 feet in length, 1,500 tons, 500 H.P. auxiliary motor giving 8 knots; Horst Wessel (1936) and Albert Leo Schlageter (1983), 1,634 tons, 296 ft.s. in. length, 35 ft. 4 in. beam, 15 ft. 9 in. draught, 750 H.P., auxiliary motor giving 10 knots, complement 78, accommodation for 200 cadets. Training Vessels.—Nordese (1914), 830 tons, 12 knots; Paul Beneke (1986), 460 tons, 13 knots; Dhame, Spree, Beowulf, Freyr, Frihlof, Wotan, Sigfrid Hagen, Huigin, Hildebrand, Odin, Volker, and Munin, 400 tons, 10 knots, 1 3.5-in., 1 M.

Motor Mineswereres.—R 1—16 (1933-4), 85 ft., 44 tons, 700 H.P., 17‡ knots, 1 1-pr. gun; R 17—34 (1935-1638), R 34—40 (1939), 90 tons. Probably others, number unknown.

Mineswereres.—R 1—16 (1933-4), 85 ft., 44 tons, 700 H.P., 17‡ knots, 1 1-pr. gun; R 17—34 (1936), 120 tons.

Taber Serse.—AT 1 and 2,550 tons, 10 knots; 8 small craft (1906-15), 70 tons, 9 knots; 1—17 (1936), 130 tons.

Taber Serse.—Zahingen (ex-battleship), 11,800 tons, 11 knots, 2 8-5-in, 4 m.g.; 8ar (1934), 2,710 tons, 16 knots, 3 4-1-in, 4 m.g.; Weiched (1923), 8.960 tons, 10‡ knots; Depor Serse.—Tsingtau (1934), 1,970 tons, 17‡ knots, 2 8-5-in, 4 m.g.; Sar (1934), 2,710 tons, 16 knots, 3 4-1-in, 4 m.g.; Weiched (1923), 8.960 tons, 10‡ knots; Donau, 10 knots; Erwin Wassner (1934), 2,710 tons, 16 knots, 1 4-1-in, 4 m.g.; Raule (ex-Wacht), 1919; Warl Peters and Adolf Luderitz (1940), 3,000 tons.

Torrero Recovery Vessers.—Orkan (1916), 470 tons, 10 knots; ex-Torpedo Boats 123, 156, 156, 157, 158, 196, 650 tons, 22 knots, 1 or 2 m. F 2, 7, 10 (1986), 600 tons, 240 ft.,

TORFEDO RECOVERY VESSELS.—Orkan (1916), 470 fons, 10 knots; ex-Torpedo Boats 123, 136, 165, 165, 165, 166, 650 tons, 22 knots, 1 or 2 m. F 2, 7, 10 (1886), 600 tons, 240 ft.

SURVEXING VESSELS.—Meteor (1924), 1,150 tons, 14 knots, 1 3-4-in.; Hooge, Norderoog, Suderoog (1912), 80 tons; Triton.

Minesweepers.—Meteor (1924), 1,150 tons, 1,800 H.P., 16 knots, 1 4-1-in. gun; M.—40, 600 tons, 17 knots, 2 4-1-in. guns, 1 1-46-in.

Olikes.—Samland, 10,111 tons; Franken, Difmarschen, Ermland, Westerwald. Probably others, number unknown.

Olikes.—Nemel, 1998 tons; Rosel, 796 tons; Acheron, 1836, 525 tons, 16 knots; Warnow, 726 tons gross, 13 knots; Loch, 3,850 tons, 13 knots.

Sloops.—Hela (1940), Grille (1935), 2,560 tons, 20 knots, 21-46-in. A.A., 4 M.

Minelares.—A.B. C and D (1940); M.T.1., M.T.2 (1917), 550 tons, 10 knots, 1 M.; C. 1, 3, 5, 9, 10, 14, 16, 21-30, 90 tons, 9 knots. Probably others, number unknown.

HOSPITAL SHIPS.—14 in number.

Tros.-Number unknown. RIVER MINESWEEPERS, -FHR 1-12. 4 tons, 2 M.

## For Destroyers, Torpedo Boets and Submarines, see Flotilla Tables.

#### GREECE ‡

	8 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	ment	620		•
	3	FG	knots tons 224 1500 (24 t.)		
	Speed		knots 22+ 24+ +		
	seqn	Torpedo t	. ĝ. <b>‡</b>		
Armament		Guns	in. 4 9-2-in., 8 7-5-in., 16 8 3-in., 4 3-yr., 2 3- (eu. in. A.A., 2 M.		
	tion	Secondary	ij.		
	Gun position	Heavy	'력 <b>ڰ</b>	raots.	
ur		Bulk- bead	ii.	Hen 16	
Armour		Side Bulk- Belt Deckabove head Belt	.di⊵.	† Probable speed 15 knots. eet is in British Hands.	<b>d</b>
		Deck	ii 🛂	Probe	Service Se.
		Belt	ii % ii ig. 8.	¥ 366 +	toms S
	Ç		1,100,000	of the Gree	nice, for Cus 8, 1 4-in., 16
noi	omplet	Date of	19101911	l F	at Ven 35 ton
प	onnel 1	O ets O	1910	ģ	ss), 92
	Where built		Leghorn (Orlando)	ed and refitted 1982. ‡ Under the control of Germany. Part of the Greek Fleet is in British Hands.	knotes, 4 3-in. guns. oss, 114 knotes, 4 4-in. a.a. 37 knotes, 2 Lewis guns, 2 r.r., 4 built at Venice, for Customs Service. 37 knotes, 2 Lewis guns, 2 r.r., 4 built at Venice, for Customs Service. Idaho) (1908). , Samos. Tompasie (ex-British Flower Class), 925 tons, 1 4-in., 164 knote.
r. ery	power poilers poilers	eroH 10 eqvT bns	19,000 (21,000t) B.	stubed and refitted 1932.	knots, 4 3-in, guns. ross, 11‡ knots, 4 4-in, A.A., 37 knots, 2 Lewis guns, 2 s, 450 tons, 13 knots, 40 mi Lldaho) (1908). s, Samos. 1 Tompazis (ex-British Flov 1 brons, 1 3-in.
	3 qZ	ust.(I	24.	ped a	knots, 4 3-in ross, 11½ knots, 2 , 37 knots, 2 , 450 tons, 1 , 1daho) (190 s, Samos, 1 1 Tompazis (1 ) tons, 1 3-in.
	Bearn		<b>₹8</b>	* Retu	
(6	emeri'x	) digas.I	<del>1</del> 8		8 (1929), 1,870 tons, 11 s (1920), 4,549 tons g nryevoft type, 55 ft., INTELAYER—Tenedoc Carlons (ex-U.S.N. 23ios, Lemnos, Lesbo Krieza, Saktouris and mber, ex-U.S.N. 230 mber, ex-U.S.N.
1	brabr cemen		tons 9301		s (1929), 1,8 setos (1920), Thornycroft D MineLanax EL.—Lemnox —Caios, Ler is, Kriezis, Si i number, ex.
	NAME		Giorgios Averoff *		Tranning Ship.—Ates (1929), 1,870 tons, 11.  Repair Ship.—Hephestos (1920), 4,549 tons given Her. Bis., 171 and 172, Thornycorid type, 65 ft.,  Desparch Vessel, and Minelayers—Henedos  Joan Defence Vessel, —Lemnos (ex-U.S.N.  LANDING Ship. Trans.—Calos, Lemnos, Lebbo  ORVETTES.—Apostolis, Kriegis, Saktouris and  Mineswerepers.—8 in number, ex-U.S.N., 280
	Class		ij	Digitized	Caral

Training Seif.—Ares (1929), 1,870 tons, 11 knots, 4 3-in, guns.

Reparts Seif.—Hephestos (1920), 4,549 tons gross, 114 knots, 4 4-in. a.a.

Reparts Seif.—Thorayorit type, 55 fft., 37 knots, 2 Lewis guns, 2 t.t., 4 built at Venice, for Customs Service.

Desparce Vessel. And Minelander and —Tenedos, 450 tons, 13 knots, 40 mines.

Coast Defence Vessel.—Lemnos (as-U.S.N. Idaho) (1908).

Landing Ship Tanks.—Caios, Lemnos, Lesbos, Samos.

Converters.—Apostolis, Kriezis, Saktouris and Tompazis (ax-British Flower Class), 925 tons, 1 4-in., 164 knots.

Minesweerers.—S in number, ax-U.S.N., 290 tons, 1 3-in.

For Destroyers, Torpedo Boats and Submarines, see Flotilla Tables.

ITALY.—BATTLESHIPS

		11	(91			LIGUE			noise		-	-	Armoun	a l		Armament	ment				
NAN Enderd Enderd	ndard reemen		merixe	Beam		-powe machi boilera	Where built	o <b>ns</b> i	omple	Š					Gun position				Speed	Fuel Com-	Con- Ple-
re38 siqaib	nat2 siqaib		) digna.l		ısıQ	Type of		lo stad	) lo eta		Belt Deck	ock at a	Side Bulk- above head Belt	Page de H	sun2	Secondary		t obequoT		Cost	ment
tons 35,000	tons 35,000		ft. in. 774 0	in. ft. in.	#8	130,000 P.T.		1939 ві4	Bidg.	33	i OI	i.	ii.	i.	.di	6	1., 12		knots 30	tons	1600
Italia (ex-				2		( <del>.</del> )	Genos 1	1937 1940	076			-				M.G., 2 catap 8 aircraft.	ults,				
Vittorio Veneto § "	:		:	:	:	:	Trieste	1937 1940	076												
Andrea Doria † § 23,622	23,622		611 6	8	8	75,000	Spezia 1	1913 1916	916		ğ:	**	۰ :		<b>a</b>	6 10 12-6-in., 12 5-3-	5.3		23	3000	1074
Calo Dailio ↑ § "	:			:	:	) s	Castellam- 1 mare	1913 1915	915		=	•					rate.			2	•
Conte di Cavour ;	:		:	:	:	•	Speria 1	1911	1915		₹:		8 5		ي ا ا	10 12.6-in., 12	4.7-		23	3000	1200
Giulio Cesare ‡ § "	:				:		Genos 1 (Ansaldo)	1011 1914	914	<b></b>	7:	*	φ <b>j</b>		<b>8</b> 8	36 A.A. M.G., 2 catapults, 4 air- craft.	, ia			2	r
			_		_			-	_						_		_		_	_	

§ Under British control.

‡ Reconstructed 1937.

+ Reconstructed 1940.

* Building ceased through lack of materials.

ITALY.—CRUISERS, &c.

Line Line	THE STATE OF STATE					Horse-			Date	-	Armour	ım	Armament				
Class	NAME	Standard Length displace (ex-	Length (ex-	Веаш		Type of Draught machinery	Where built	Date of		Cost	Side	Gun	Suns	Tor-	Speed	Fuel	Com-
54	ALTO A TOTAL					boilers			tion		Deck	tion	STATE	tubes		3	
peacadu	Taior di Coroio	tons 7874	ft. in.	ft.	in. ft. in.		Odero-Terni Or-	1935	1036	43	in.	ii	6.in 8 3.0.in	6	knots	tons	8
E S	Duca degli					P.T. (G.)	lando Spezia Cantieri Riuniti				,	-	A.A., 8 7.5-in.	21,	3 2		
	Giuseppe Garibaldi §			*	*		dell' Adriatico, Trieste	"	"				craft, 2 catapults.	:	£	:	
Attendolo	Eugenio di Sa-	7283	610 3	57	4 16 4	110,000	Ansaldo, Genoa	1935	1936		About	00	86-in., 63-9-in., 8 7-5-in. A.A., 8-5-	6 21"	364	1200	550
	_		2				Orlando, Leghorn						in. M., 1 catapult, 3 aircraft. Fitted for minelaying.	(T)		2	2
Condottieri	Raimondo Montecuccoli 8	6941	597 9	54	6 14.9	106,000 P.T.	Ansaldo, Genoa	1934	1935			90	6-in., 6 3-9-in.	4	37	1200	520
= 1	H		£			a a	Trieste		"		7.2		A.A., 8 ·5-in. M., 2 aircraft, 1 cata-	(D.)	2	"	E
Modified Trento	Bolzano	10,000	646 3	67	8 18 0	0 150,000 (G.)	Ansaldo, Genoa	1932	1933		Abt. 3	00		21,	38	3000	800
Condot- tieri Class	Luigi Cadorna §	2008	554 6	50 10	14	95,000 (G.)	Stabilimento Tecnico Tries- tino, Trieste	1931	1933		63 63	<b>x</b>		21, (D.)	37 (39‡ t)	1000	230
	1							-	-			_	catapult, 2 sea- planes.				

§ Under British control.

ITALY.—CRUISERS, &c.—continued.

							Horse-			Date		Arm	Armour	Armament			Fuel	
Class	NAME	Standard Length displace (ex-	Length (ex-	_	Beam	Draught	Type of Draught machinery	Where built	Date		Cost.	Side	Gun	-	Tor-	Speed		Com-
			original ori				boilers		Tamer .	tion		Deck	tion	em o	tubes		Oil	
Zara Class	Gorizia	tons 10,000	ft. in. 599 9	9. ft. 67.	i.	ft. in.'	95,000 (G.)	Odero-Terni, Orlando	1930	1931	43	in. About	.ij	8 8-in., 12 3·9-in. A.A., 8 7-5-in. A.A., 8 5-in. M. A.A., 1 catapult, 2 seaplanes.	1	knots 32	tons 2200	800
l.c.	Bari (ex-German Pillau)	3248	443 11	44	L-	132	28,000 tur.	Danzig (Schichau)	1914	1915		3	П	8 5-9-in., 3 3-in. A.A., 3 M., 120 mines.	1	27.5	984	372
ئ Digitize	Giuseppe Miraglia * §	4882	397 0	0 49	00	17	12,000 P.T.	Spezia	1923	1927				4 4-in. A.A., 4 M., 2 catapults, 16 planes.	1	21.5	1 440	300
Regolo Class	Cornelio Silla Paola Emilio Attilio Regolo	3360	444 3	4	6 ,,	13	120,000	Genoa Leghorn	Bldg. Bldg. 1941	1942				85.3-in., 62.5-in., 14 M. A.A., carries mines.	21° (9.)	4 ::		
	Scipione Africano Caio Mario	2 2	1 1			33	2.2	Spezia.	Bldg. 1942	1942				**	2 2			
gl	Claudio Tiberio Pompeo Magno §	2 2	: :		"		2 2	Ancoma	1942	1942				33	2 2	"		
e	Ottaviano Augusto Ulpio Traiano Claudio Druso		: : :				2 2 2	Palermo Trigoso	B B B B								1.	
	Vipsanio Agrippa Giulio Germanico		2 2				3 3	Naples	Bldg. Bldg.						2 2	" "		

§ Under British control.

* Ex-merchant ship, taken over on the stocks. Aircraft transport.

Ministratores.—Fasana, Buccari, Durazzo, and Pelagosa, completed 1926, 531 tons, 10 knots (L.C. machinery), 1 3-in. gun, 100 mines; Azio, Lepanto, completed 1926-7, 615 tons, 10 knots, 2 4-in. 13-in.; 80 mines; Crotone, Viesti, 359 tons, 195 ft., 1,600 H.P., 14 knots, 2 4-in. guns, 70 mines; Laurana, Rovigno, and Albona (ex-Austrian), 112 tons, 11 knots, 13-in.; 10 mines; Laurana, Rovigno, and Albona (ex-Austrian), 112 tons, 11 knots, 13-in.; 11 knots, 14-in.; 12-in.; 13-in.; 13-in.; 13-in.; 13-in.; 13-in.; 13-in.; 13-in.; 13-in.; 14-in.; 13-in.; 15-in.; 15-in

ESCORD GINNOATS.—A. Baffle, E. Giovannini (1922), 182 tons, 23 knots, 24-in. guns, 27-ir.; Orsa, Orione, Proctone, Pegaso (1938), 293 ft., 555 tons, 28 knots, 23-9-in., 8 k.o.; Ape, Cormorano, Danaide, Gabbiano, Gru, Minerva, Pellicano and others.

SURVEXING VESSELS.—Ammiraglio Magnaghi (1914), 1,506 tons, 10‡ knots, 4 3-in.; Cariddi (1916), 330 tons, 10 knots, 1 3-in. gun; Cherso, 3,988 tons, 10‡ knots, 2 3-in. guns; Otranto (1911), 290
PATROL VESSELS.—Cirche (1912), 384 tons, 10 knots, 2 3-in.; Rimini (1912), 319 tons, 9½ knots, 1 3-in.; Gun; Gallipoli (1911), 310 tons, 10½ knots, 2 3-in.; Illina (1918), 654 tons, 113 knots, 1 3-in.; Gun; Palmaiola (1902), 472 tons, 8½ knots, 1 3-in.; Aurora, 935 tons, 14½ knots, 2 2½-in.; Illina (1918), 654 tons, 11

Training Ships.—Cristoforo Colombo (Castellamare, 1928), 2,787 tons, 10 knots (Diesel-electric), 4.3-in. guns, 2 A.A. M.G.; Amerigo Vespucci (Castellamare, 1931), 3,543 tons, 1,800 H.P. (Diesel-electric), 11 knots, 4 3-in. A.A., 2 A.A., M.G. knots.

Cable Ship.—Giasone, 1,192 tons, 250 ft., 15 knots.

Togs.—S7 in number, 100-300 tons, 8-13 knots, some fitted with 13-in. gun.

Togs.—S7 in number, 100-300 tons, 8-13 knots, some fitted with 13-in. gun.

Waren Carnerss.—Dalmaria, 1stria, 2,300 tons, 10 knots, 1 47-in., 13-in.; Flegetonte, 1,162 tons, 9 knots, 3 3-in. a.a.; Verde, Pagano, 1,432 tons, 9 knots, 1 47-in., 13-in., 13-in.; Ticho, 2,588 tons, 9 knots, 2 3-in.; Isonzo, Po, Volturno, 114 knots, 2 4-in., 4 m.g.; Scrivia, Tirso, 94 knots, 4 m.g.; Mincio, Bormida, 645 tons, 9 knots; Besia, Garigiano, 1,000 tons, 9 knots; Frigido (1912), 398 tons, 9 knots; A m.c.; A dige (1929), 780 tons, 8 knots; Arno and Brenta (1929), 630 tons, 9 knots; Garda, Verbano, Sebeto, Metauro, Sile (1934), 592 tons, 9 knots; Frigido (1912), 398 tons, 9 knots.

Moror Torpedo Boars.—M.A.S. 423-437, 15 tons, 40 knots, 2 18-in. T.T., 5 depth charges; M.A.S. 438-441, 354 tons; M.A.S. 501-516, 47 knots, 2 18-in. T.T., 6 depth charges; M.A.S. 438-441, 354 tons; M.A.S. 501-516, 47 knots, 2 18-in. T.T., 6 depth charges; M.A.S. 517-551, 20 tons, 47 knots, 1 M.C., 2 18-in. T.T., 6 depth charges; M.A.S. 517-551, 20 tons, 47 knots, 1 M.C., 2 18-in. T.T., 6 depth charges; M.A.S. 517-551, 20 tons, 47 knots, 2 18-in. T.T., 6 depth charges; M.A.S. 517-51, 517-551, 20 tons, 47 knots, 2 18-in. T.T., 6 depth charges; M.A.S. 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517-51, 517

tons, 9 knots, 1 3-in.; Lido, 226 tons, 12 knots, 1 3-in.
Monte Grappa, Montello (1919), 605 tons, 7 knots, 1 12-in., 4 3-in.; Monte Cengio, Monte Novegno (1919), Monte Cengio, Monte C

MOTOR VEDETTES.—Vigilante, Vedetta (1938), 854 ft., 70 tons, 400 H.P. (D.), 12 knots, 1 3-in.

HOSPITAL SHIPS.—Aquilea, Arno, California, Citta da Trapani, Gradisca, Sicilia, Tevere, Toscana, Virgilio.

SALVAGE SHIPS.—Giclope (1903), 1,050 tons, 13-5 knots, 1 3-in.; Teseo (1915), 1,250 tons, 16 knots, 2 3-in.; Anteo (1912), 1,250 tons, 8 knots; Titano (1913), 828 tons, 14 knots, 13-in.

SLOOP.—Eritrea, 2,172 tons, 20 knots, 4 4.7-in. guns, fitted for minelaying.

tons, 7 knots, 1 12-in., 4 3-in.

joogle

For Destroyers, Torpedo Boats and Submarines, see Flotilla Tables.

## JAPAN.—BATTLESHIPS.

	Fuel Com-	nen		22.5 4500 1300		4500 1380		4500 1250		787	5	1367	10 a	ghig)
	Fuel	ਫ਼	tons	4500		4500		4500		7007	200			_
	Speed	'	knots tons 30	22.5		æ		38		6				_
	1	s obequoT						4 (sub.)	27-in.			•		
Armament		Guns	9 16-in.	12 74-in., 166-in., 8	L., 3 seaplanes, 1	12 74-in., 18 5-5-in.,	H.A., 3 seaplanes, 1 catapult.		L., 3 seaplanes, 1 catapult.	2 16 12 90 6.6 12	8.5-in. A.A. 8 A.A.	M.G., 3 seaplanes,		
	Gun osition	Secondary	.ġ	۰;	1	φ;	1	æ =			-			_
	Gun position	Heavy	ġ.	23;	ģ 4	23;	ė.	01		2	=			_
mo		Bulk- bead	. <b>i</b>					-		-				_
Armour		Side above belt!	. <b>ģ</b>	<b>80</b>	ġ 4	ω,	į 4	8						_
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noi	omplet	Date of o	1939 1941 1941 1942 31dg 31dg	1914 1915	1915 1917	1917 1918	19161917	1913 1915	1912 1913	1914	1281 0281	1919 1920		
	launch	lo staG	1939 1941 Bldg Bldg Bldg	1914	1915	1917	1916	1913	1912	200	78. 1. 1.	1918		_
	Where built		Kure Yokosuka Nagasaki Kobe Kure	Kure	Yokosuka	Nagasaki	Kobe (Kawasaki)	Nagasaki (Mitanhishi)	Barrow Kobe	YOKOSUKS	r okosuka	Kure		
Ç19	-power nachine steliots	eroH i to eqqT f bns				45,000	45,000 B.C.T.		ж.			ķ		
	3qÐt	ua1(I	ft. in	28 6	2	88	:	27 6	2 2	_	<b>⊋</b>	2		
	Beam		ft. in.	94 0	2	94 0	2	98	2 2	- 3	<u>s</u>			_
(6		o) digna.I	ft. in.	673 0	:	683 0		0 407	2 2		3	:	_	_
	brabi suemec		tons 45,000 ""	29,330	2	29,990	R	29,330	::		32,120	:		
	NAME		ı#Ħ₽⊳	Pueo §	Yamashiro §	Hyuga *	Is.	Kirlshims;*	Kongo ;* Haruna	Hiyes	Matter .	Nagato *		
	Ę	2		Fuso	Class	<b>9</b> 8	itized b	†Kongo	00	gl	Nagato		-	

ARMOUEED CEUESES now rated as Coast-Devents Shirs (1st class), completed 1899-1904: Kasuga, 7,080 tons, 20 knots, 1 10-in., 2 8-in., 16 6-in.; Yakumo, 9,010 tons, 16 knots, 8-in., 6 8-in.; Adsums, 8,640 tons, 16 knots, 4 8-in., 6 8-in., 6 8-in.; Adsums, 8,640 tons, 18 6-in., 6 8-in., 14 6-in., 5 8-in.; Assums, 9,240 tons. 21½ knots, 4 8-in., 12 8-in., used as a training ship.

* Reconstructed 1936.

† Modernised 1928-1831, including fitting of bulges and new foremast, and conversion to oil burning.

† Two of this class destroyed. § Modernised 1934.

JAPAN.—AIRCRAFT CARRIERS.

						Horse-			Date		Armour	our	Armament				
Class	NAME	Standard Length displace- (ex- ment treme)	Length (ex- treme)	Bosm	Draught	Type of Type of Draught machinery and boilers	Where built	Date of launch	o com- ple tion	<b>1</b>	Side	Gun Poeti- tion	Guns	Tor- pedo tubes	Speed	Fuel	Pen-
	Hosho (Hosyo) †	tons 7470	ft. 510 b.p.	<b>=3</b>  8	ft. 16 o.		Teurumi (Asano)	1821	1922	44	'ë	ij	4 5.5-in., 2 3-in. A.A., 20 aircraft.	1	knots 25	2700 2700	929
	Kamoi §	17,000	33	67	o 88	8000 G.C.T. Shectric drive	New York S.B.	1922	1922 (con- varted 1933)				2 <i>5:5-i</i> m., 2 <i>3-i</i> m. a.a., 15 ecaplance.	1	15	4000	
<b>D</b> igitize	Notoro §	14,060	34 v 3	8	26 6 15 0	2850 78cip.	Kobe (Kawa- saki) Yokobama	1920	1920	. 7			2 4.7-in. 2 3-in. a.a., 16 seaplance. 12 5-in. a.a., 30 air-	1	21 83	1000 io	155
8.c. 8.c. 5.c.	Chitose (Titose) Chivoda (Tiyoda) Fissitin	000	5773			(G.) 15,000 tur. & t.b. 9000	Kure Kure Kure	1836 1837 1939	1938 1938 1941				craft. 6 5-in. a.a., 12 a.a. 8.0.	111	888		
ggle	Kamilawa Bokaku	20,000				(G)	Kobe Yokosuka	1939	1937			<u> </u>	2 3-in., 10 sesplanes. 12 5-in., 60 aircraft.	1 1	9 8 8		
	Zulraku	20,000		_		(G.)	Kawasaki	TROS	1341			_	12 3-18., 00 aircrait.	-	3		

† Fitted with gyro-stabiliser.

§ Converted from oilers.

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S B	ple- ment							692	052	<b>F</b> 09	450	
Fuel	S   S	3	tons					3000	2500	1400	300	
	Speed		knots		33		33	33	æ	æ	33.0	
	Tor	tubes			a;	• • €	21-in. 8.w.	(T.) 8 21-in. a.w.	12 21-in. a.w.	12 21-in. 8.w.	8 21-in. 8.w. (D.)	
Armament		emn)	6 12-in.		88-in., 85-in. A.A., 4	craft, 2 catapults.	15 <i>6-f-i</i> n., 8 <i>5-i</i> n. A.A. 4 <i>3-i</i> n., 12 M.G., 2 catapults, 4 air-	craft. 108-in., 44-7-in. A.A., 8 A.A. M.G., 2 cata- pults, 4 seaplanes.	108-in., 84-7-in. A.A., 2 M., 2 catapults, 4 seaplanes.	68-m., 44.7-in. A.A., 10 m., 2 planes, 1 catapult.	7 5·5·in., 2 3-in. A.A., 2 K., 1 seaplane, 1 catapult, 80 mines.	
Armour	P. Gara	tion	ij									
Αm	Side	<b>у</b> ээД	in. 6		63	89	27 C2	212	III		69 I	
	Cost		3				2,500,000 estimated					
Date	ple ple	1011			1938	1939	1936 1937	1932 1932 1932 1932	1929 1929 1929 1928	1927 1927 1926 1926	1925 1923 1923 1923	1923 1922
Date	of launch		1940	a page Bades Bad Bades Bad Bad Bad Bad Bad Bad Bad Bad Bad Bad	1937	1938	1934 1 <b>9</b> 36	1930 1930 1930	1928 1928 1927 1927	1926 1926 1925 1925	1923 1921 1922 1922	1922 1922
1	Where built		Mitsubishi	Maizuru Yokosuka Yokosuka Kure	Nagasaki	2	Yokosuka Kawasaki	Nagasaki Kobe Kure Yokosuba	Kobe Nagasaki Yokosuka Kure	Kawasaki, Kobe Nagasaki Nagasaki Kawasaki, Kobe	Uraga Uraga Sasebo Nagasaki	Sasebo Kawasaki
Horse-	Type of machinery	boilers			000,08	ĵ≱	90,000 (G.)	100,000 (G.) K.	100,000 (G.)	95,000 (G.)	70,000 (G.)	
	Draught		ft.		14 7"		14 9	164	16.	14	164	
	Beam		ſt.		8	2	49 <b>2</b>	<b>₩</b>	<b>₹</b>	50	474 "	
Length	(ex- treme)		ft.		614 3"	7. "	640	650	640	595	535	::
Standard	displace- (ex- ment treme)		tons 15,000		8500	8450	8500	9850	10,000	7100	5170	* *
	NAME		I	田田內	Tone	Tikuma	Susuya	Chokai Maya Atago Takao	Ashigara Haguro Myoko Nachi	Kinugasa Aoba Furutala Kako	Abukuma Isudisu Nagara Natori	Yura
	Class				Tone	Class	Kumano Class	Atago Class	Nachi Class	Furutaka Class	Natori Class	

	Jintsu	5195	535	474	153	90,000	Kawasaki	1923   1925	1925		7.5-in., 2.3-in. A.A., 8 3 5 M., 1 seaplane, 1 21-in. catapult, 80 mines. a.w.	8 21-in.	3.0	300	450
Kiso		2100	535	474	153	70,000	Nagasaki	1920	1921	62	7 5.5-in., 2 3-in. A.A.,	-j.	3.0	300 433	623
Kita	Kitakami	2	"	"		(6.)	Sasebo	1920	1921		plane, 80 mines.	a.w.		1260	
Oi		"	ů	"	ĸ	"	Kobe	1920	1921			(i)	-		
Tam	8	**	"	"	"		Nagasaki	1920	1921						
Tatsuta	uta	3230	468	40\$	13	51,000 (G.)	Sasebo	1918	1919		45.5-in, 13-in, A.A., 2 M., fitted for minelaving 1 sea-	18-in.	31	1 8	332
Kas	Kashii	0009				8000	Yokohama	1940	1941	_	plane. 4 5.5-in., 2 5-in. A.A.	4 t.t.	18		
Kasi Ning	Hai +	2500									6 5.5-in., 6 3.5-in.	4 01.10	83		
Ī	TOTAL	"							_	_	A.A.		_	-	

16

Minemateres—Katsuriki (1917), 1,540 tons, 13 knots, 3 s-in, 150 mines; Itsukushima (Uraga, 1929), 1,970 tons, 16 knots, 3,000 H.P. (Diesel), 3 5-5-in, 2 3-in, and 19 smaller vessels, 300—400 tons, about 12 knots, 2 3-in, 45 mines; Okinoshima (1936), 4,400 tons, 9,000 H.P., 20 knots, 4 5-5-in, 4 M.G.; Sirakami, Aotaka, Hatsutaka, Sokuten, Nariju, Kyosai, Kunayiri, Ishigaki, Hasidate, Simusu, Hatijo, Tanzuru (1939), 720 tons, 20 knots, 2 47-in, 2 m. Nos. 14 1025), 400 tons, 20 knots, 2 47-in, 2 m. Nos. 15—18 Goneoars.—Saga (1912), 685 tons, 15 knots, 147-in, 3 3-in, A.A.; Ataka (1922), 725 tons, 16 knots, 2 47-in, 2 3-in, A.A.; Valar, 1930), 50 tons, 15 knots, 5 w or Farial (1939), 50 tons, 15 knots, 5 w or Farial (1920), 720 tons, 15 knots, 5 w or Farial (1920), 720 tons, 15 knots, 5 w or Farial (1920), 720 tons, 15 knots, 15 knots, 5 w or Farial (1920), 720 tons, 15 knots, RIVER GUNSOARS—Saga (1913), 885 tons, 16 knots, 147-in., 3 3-in. A.A.; Ataka (1922), 725 tons, 16 knots, 2 47-in., 2 3-in. A.A.; Todo (1320 tons, 12 knots, 2 3-in. A.A.; Todo (1920), 170 tons, 16 knots, 1 3-in. gun; Karada, Hira, Hodzu, Seta (1923), 305 tons, 16 knots, 2 3-in. A.A.; Toba (1911), 215 tons, 15 knots, 2 3-in. A.A.; Furbimi (1939), 230 tons, 16 knots, 1 3-in. A.A.; Karatsu (ax-U.S.S. Luzon), Tatara (ax-U.S.S. Wake), 2 3-in.; Toba (1911), 215 tons, 15 knots, 2 3-in. A.A.; Karasus (ax-U.S.S. Luzon), Tatara (ax-U.S.S. Wake), 2 3-in.; Sunda, 16 knots, 1 3-in. A.A.; Karasus (ax-U.S.S. Luzon), Tatara (ax-U.S.S. Wake), 2 3-in.; Sunda, 16 knots, 1 3-in. A.A.; Karasus (1896), 9.750 tons, 13 knots, 1 3-in. A.A.; Karasus (1896), 9.750 tons, 13 knots, 1 3-in. A.A.; Karasus (1896), 9.750 tons, 13 knots, 1 3-in. A.A.; Karasus (1896), 9.750 tons, 13 knots, 1 3-in. A.A.; Shirataka (1929), 1,345 tons, 16 knots, 3 47 in. A.A.; Sunda, 18 knots, 2 47-in. A.A.; Shirataka (1929), 1,345 tons, 16 knots, 3 47 in. A.A.; Sunda, 18 knots, 2 4-in. A.A.; Sunda, 18 knots, 2 5-in. Rapair Ship.—Akashi (1930), 14,060 tons, 12 knots, 2 4-in. A.A.; Sunda, 2 3-in. A.

TRAINING SHIPS.—Shikishima, 11,275 tons; Fuji, 9,179 tons.

PRANSPORTS.—Mamiya, 15,820 tons, 14 knots, 2 5-5-in., 2 3-in. A.A.; Muroto, Noshima, 8,215 tons, 12½ knots, 2 4-7-in.

Motor Torped Boats.—Number unknown.

For Destroyers, Torpedo Boats and Submarines, see Flotilla Tables.

* U.S. claimed 24 Japanese cruisers sunk by November, 1943.

+ Ex-Chinese.

#### NETHERLANDS.*

	Com- nent		8	302	88	noote ,
	Fuel Oil		12 %	입	·  88	- 6
	Fuel Speed Coal Oil		rnots 14	16.5	32 <del>1</del>	25 100 100 100 100 100 100 100 100 100 10
		d obequoT	ı	1	6 27-in. (T.)	30cls, 24
Armament		Guns	4 4·7-in., 2 M.	19-4-in., 4 5-9-in., 23-in., 67-pr., 2	6 %. 10 4-in. in Tromp; 10 4-in. in Heems- kerck, 4 7.5-in. A.A., 4 .5-in., 1 sesplane.	# Training abip.    Training abip.   Tra
	Gun positzion	Secondary	.력	8.H		s, 124 s, 124 C., 466
	P. a	Heavy guns	. <b>£</b> i	10 H.N.S.		S.S. P.(
our		Bulk- bead	.ġ			ts, 3 ; 15 knc g traw 3), 2,6 5-in., 6 -cx-U.S
Аттоп		Side Delt 1	. <b>ġ</b>			1.5 km; tons, veeping is (1928, 8, 3 5.4 (1942) (1942) (1942) (1942) (1943) (1943) (1943) (1943) (1943) (1943) (1943)
		Belt Deck above beat best	.ਜ਼ਂ••	69	<b>-</b>	ons, 11,350 minest derkrus der
		Part .	.ġ <b>≈</b> ;	8.X.B.	Ø	, 593 t (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936), (1936)
	Cost		વ્ય	347,500		+ Training ship.  30 mines; Medusa (1911), 593 tons, 11-5 knot 0 mines; Jan van Brake (1936), 1,350 tons, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10-5, 10
uo	Date of completion			1902 1904	1938	Halinia, H. S. Mer., GO 7. ESSEJ.
t	Date of Leamch		1913 1915	1902	1937 1936	nines nes; 13-; 13-; 13-; 0 kno oemb comb comb comb comb comb com varie.
	Where built		Amsterdam	Amsterdam	Amsterdam	13 knots, 3 3-in. A.A., 2 M., 130 mines; Medusa (1911), s, 2 47-in., 4 1-5-in., 4 M., 120 mines; Jan van Brakel (1971), 525 tons, 15 knots, 1 3-in., 4 M. Anumbans, 9 knots, 170 H.P. (Diesel), 6 knots, 11-5-in. 5 knots, 170 H.P. (Diesel), 6 knots, 11-5-in. 5 knots, 147-in., guns; Flores, Soemba (1927), 1,500 tons, 10 47-in., 2 1-5-in. A.A.  No., armed with 2 3-in. guns, 12-20 knots, 600-1,000 tons, ruknown.  FRIGATE.—Johan Maurits (18. Schorpiden, Buffel, Noord-Brabant.  FRI Destroyers. Tons. From Parts.—Oranje, 18. Schorpiden, Buffel, Noord-Brabant.
£191	Horse-power. Type of machinery and boilers		1500	1 282 C	66,000	ts, 3 3-in. in., 4 1-5-i (1937), 52 note. 38 tons, 17 1, 4 4-7-in. in., 2 1-5-in ned with 2 wn. 1.
	Draught		±.8°	19	15	13 kno ij, 2 4.7. ijnssen ns, 9 k 915), 68 5 knots 5 knots 7 knots 7 knots 7 knots 7 knots 7 knots 7 knots 8 knots 8 knots 1 k
Beam		48	87 tons, 15 knots sham Cr. 7, 260 to ebbel (11 tons, 24 7, knots feen in N Wumber un 1).			
(6	Standard displacement		ft. 172	317	433	922), 6 tons, er, Abr. ff (1911 elius Dr. '), 1,766 '),
•			tons 530	4871	3860	—Douwe Aukes (1922), 687 tons, and der Zaan, 1,350 tons, 15 knot es.—Jan van Gelder, Abraham Cheser.—Hydrograf (1911), 260 to reserve Sure.—Cornelius Drebbel (1 rikisbergen (1939), 1,760 tons, 2 lar.—Tyr (1876), 244 tons, 7 knot borns.—ex-British. Number unknweeren.—ex-British. Number unknweeren.
	NAME		Gruno	Hertog Hendrik †	Tromp Jacob van Heems- kerck	MINISTERANTES.—Douwe Aukes (1922), 687 tons, 13 knots, 3 3-in. A.A., 2 M., 130 mines; Medusa (1911), 593 tons, 11-5 knots, 2 3-in., 1 M., 65 mines; Medusa (1911), 593 tons, 11-5 knots, 2 3-in., 1 M., 65 mines; Ministersen.—Jan van Gelder, Abraham Crijnssen (1937), 525 tons, 15 knots, 1 3-in., 4 M. A munber of minesweeping trawlers.  Superants Versel.—Hydrograf (1911), 260 tons, 9 knots.  Superants Defor Ship.—Cornelius Drebbel (1915), 688 tons, 170 H.P. (Diesel), 6 knots, 11-5-in.  Futors And Charles of Cornelius Drebbel (1915), 1,760 tons, 25 knots, 44 dr.in. guns; Flores, Soemba (1927), 1,500 tons, 14½ knots, 3 5-9-in., 6 M.  Police And Chyrolars—experies — Seventeen in No., armed with 2 3-in. guns, 12-20 knots, 600-1,000 tons.  Motor Torens Chyrolars—experies — Seventeen in No., armed with 2 3-in. guns, 12-20 knots, 600-1,000 tons.  Motor Minesweeders—experies — Seventeen in No., armed with 2 3-in. guns, 12-20 knots, 600-1,000 tons.  Frigate.—Johan Maurits (ex-H.M.S. Ribble).  Roote Minesweeders—experies — Seventeen in No., armed with 2 3-in. guns, 12-20 knots, 600-1,000 tons.  Frigate.—Johan Maurits (ex-H.M.S. Ribble).  Roote Minesweeders—experies — Seventeen in No., armed with 2 3-in. guns, 12-20 knots, 600-1,000 tons.  Frigate.—Johan Maurits (ex-H.M.S. Ribble).  Roote Thistan Cornelis, Van Speijt, Schorpiden, Buffel, Noord-Brabant.  Frigate.—Johan Maurits (ex-H.M.S. Ribble).  Roote Destroyers.—Toredo Boats and Submarines. see Flotilla. To Roote Minister Manatal Andreas An
	Class		a.g.b.	c.d.s.	Digitized b	GOOGIC

#### NORWAY.*

	Com-	ment	249	249
Fuel	Coal	Oil	tons 550	1 220
	Speed		knots 16-5	16.5
	rpea	Torpedo t	3 18-in.	2 (sub.) 18-in.
Armament		Guns	28.2-in., 63-in.	2 8.2-in., 6 4.7-in., 6 3-in., 2 3-in. 4.4., 6 M.
	Gun	Secondary	ii.	
	G posi	Heavy guns	in. 8	8 H.S.
onr		Bulk- head		
Armour		Side above belt		
		Deck	ii.	<b>C</b> 2
		Belt	in.	7.
	Cost		300,000	300,000
uoi	omplet	Date of c	18961898	1897 1899
τ	Jannel	lo eta O	1896	1897
	Where built		Elswick	Elswick
	Horse-	To Andrews	4500	4500
	adgr	Drau	ft. 173	173
	Beam		ft. 48½	484
(6	mertem	Length (e	ft. 304	304
	rmsl	oM selqsiG	tons 3858	3858
	NAME		Thetis (ex-Harald	Nymphe (ex-Tor- denskjold) †
	Class		c.d.s.	<b>c.d.s.</b>

† Reported to be re-armed by the Germans as A.A. Ships.

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PATROL VESSELS.—Nordkapp (1937), 273 tons, 13-7 knots, 1 1-85-in.; Heimdal (1892), 660 tons, 12 knots, 4 12-pr.; Vestfjord, Stathav, King Haakon VII (ez-U.S. P.C. 467).
MINELAYERS.—Glommen and Laugen (1918), 335 tons, 9½ knots, 2 3-in. M., 50 mines; old gunboats, reflitted as minelayers: Tyr, Gor, Vidar, Brage, Nor, Vale, and Uller, 230-280 tons, armed with one 4-7-in. and other guns; Albatros (ez-Olav Trygrason), minelayer and training ship, built at Horten, 1,747 tons, 21½ knots, 6,000 H.P., 4 4-7-in. and 1 3-in. A.A. guns, and 2

ots, 11-5-in., 2 m. Motor Minesweepers. -Ex-British. Number unknown. Motor Launches. -Ex-British. Number unknown. Minesweepers.—Kamerun (ez-Rauma) and Otra (1940), 380 tons, 13:5 knots, 1 1:5-in., 2 m. Motor Torpero Boars.—Ex-British. Number unknown.

Motor Torpero Boars.—Ex-British. Number unknown.

Motor Torpero Boars.—Ex-British. Number unknown.

Motor Trans.—Tunger Castle. Eglantine, Acanthus, Rose (ex-British Flower and Castle Class).

Transmes.—A number of British Isles Class.

Whalers.—A large number of miscellaneous craft. T.T.S. (18-in)), 280 mines.
MINESWEEPERS.—Kan
MOTOR TORFEDO BOAN
CORVETTES.—TURBDER
TEAWLERS.—A numbe

For Destroyers, Torpedo Boats and Submarines, see Flotilla Tables. * Under the control of Germany.

SOVIET UNION.—BATTLESHIPS

	Fuel Com-	ment	1125				l
	Fuel	ığ	\$ 00 00 00 00 00 00 00 00 00 00 00 00 00				1
	Speed	1	knots tons 23 2000 1125 1000			8	
		Torpedo t	(sub.) 18-in.				
Armament		Guns	12 12-in., 16 4.7-in., 10 3-in. A.A., 8 M., and smaller 2	seaplanes.		9 16-in., 12 6-in.	
	Gun position	Secondary	ंचें &				1 1931
	god B	Vvs9H sang	<b>in.</b> 12–10				rnise
Armour		Bulk- bead	'ä				Modernised 1931.
γш		Side above belt	ij				*
		Deck	.ij.				
		Side Bulk- Belt Deck above head Heavy Heavy	ii.				
	Cost						Modernised, 1933.
Date of completion			1911 1915				nised
Date of launch						Blg.	Mode
Makers of engines			Baltic Works				=
	W.bere built						
	Horse-		42,000 Baltic P.T. Works				
	dynerd T T			274	ឌ	8	† Modernised, 1937.
	Beam		ft. 87	81	87	110	dernise
( <del>0</del>		) изупьл	ft. 594	594	294	008	+ Mo
1	rmal cement		tons 23,000	23,000	23,606	40,000	
	NAME	,	Parishskaya Kommuna («z-Sevastopol) †	Oktyabrskya Revolyutsiya (ez-Gangut)	Marat (cx-Petro- pavlovsk) *	п	
	Class		þ.	á	è	<b>نه نه</b> Digi	ized I

Stalin (building), 12,000 tons, 30 knots, 22 aircraft. SEAPLANE CARRIER.

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2	34											
	ģ	ą		İ	765	290	404	88	000 0000	140		
	Puel	<b>T</b>	Oii		tons  2750	1680	1200 1200 1200	<u> </u>	数  1			
		Speed Coal			knots 33-0	33-0	25.5	8	15	8	08	
		Tor	tubes tubes		12 21-in.	21.12 ri-ig (F)		21-ii.	(1)			
	Armament	ii- Guns pedo ti- tubes		8 8-in., 8 4.7-in. A.A., 8 2-pr. A.A., 2 898-	planes; 1 catapult. 8 0-in., 4 4-in. A.A., 2 3-pr., 1 M.	4 3·5-in. A.A., 4 M., 1 L.		4 4-in., 2 7-9-in. A.A., 2 M.	44.7-in., 4.5-in. A.A.	6 - 8-in. A.A. 8 - 8-in. A.A.		
	Armour	<u> </u>	5 g	ig g	. <b>ģ</b> [→]		၈					
	-¥ 	;	e gg	Deck	.ဌ <del>사</del> [8	۵  <del>۱</del>	ij i	e  -				
		Cost			બ							
		8 di			1934	1930 1928 1927	1923	1924	1924	1838		
	7	80	Aunch		1881	1928 1925 1925	1920	1922	1888 888	188	Bidg.	g ship
		Where built			Ferrol	Ferrol	Ferrol	Ferrol	Ferrol	Cadiz		* Training ship
	Horse- power. Type of machinery and boilers		boilers	90,000 P.T. (G.)	Y. 80,000 P.T. (G.) Y.	25,500 P.T.	45,000 (G.)	1700 tur.	0099	5000 D.		
		Draught			ft. 17-4	16	15	14	114	11		
		Beam			# 20	25	8	<b>\$</b>	<b>1</b>	ŧ		
	Length	S.	treme)		ft. 636	679 <del>1</del>	34	28	261¥	282		
	Gtenderd	3 B	ment		tons 10,000	7475	4857	4609	1314 (normal)	1600		
		NAME			Canazias	Mignel de Cervantes Almirante Cervera Galicia, es-Libertad	*Navarra, ex-Repub- lica (ex-Reina Vic-	Mendes Nufies		Calvo Sotelo	Horman Cortes Pisarro Yacoo Munes de Balbao Martin Alonso Pisaon Magaliane Vincente Yanes Pinnon Sarmiento de Galbos Leganji	

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Tealing Shilling Shilling.

Tealing Shilling Shilling.

Area Shilling Shilling.

Area Shilling Shilling.

Area Shilling Shilling.

Area Shilling.

Salino Trannico Shirs.—Juan Sebastian de Elcano (1928), 3,500 tons, 800 H.P. (Diesel), 9-5 knots, 4.2-4-in.; Galatea (cs-Clarastells) (1908), 2,710 tons, 8\frac{1}{2} knots, 4.2-24-in.

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#### SWEDEN.

	Com-	Com. ple- ment			287	450	328	453	450	300
		පි	tons		811	8 8	81	iio	<u>8</u>  8	<u>ااچ</u>
	Fuel Speed Coal		E SE		17.2	0 8 9	<b>83</b>	27.0	<b>ж</b>	17-0
	1	obeqroT			sub.	į l	2 21-in.	6 21-in. (T.)	I	2 sub. 18-in.
Armament		Guns	4 10-in., 6 4.7-in., 8		2 8·3·in., 6 5·9·in., 10 6-pr., 1 1-pr.	4 11-in., 8 5.9-in., 4 3-in., 26-pr., 6 m.	8 5.9-in., 4 2.2-in., 4 7.5-in.	6 6-im, 4 3-im. A.A., 4 M., 100 mines, 11 seaplanes, 1 catapult, 100 mines.	4 11-in., 6 5·9-in., 4 3-in. A.A., 2 6-pr., 6 m.	28.3-in., 65.9-in., 8 6-pr., 17-pr.
	Gun position	Secondary	. <b>ਜ਼</b>		K.5.	K 5	K.S.		5 K.S.	K.S.
	P. 30	YaseH sang	ij		7. E.B.	8. M	K.8.		& ¥.	7. E.S.
Аттюш		Bulk- bead	. <b>g</b> i							
₽		Side above belt				4 H.8.			4 H.B.	
	Balt Deck		.gi		11,	#	89		<b>†</b>	1,5
		Belt	ġ		K.S.	8 % F.S.	4 E.S.		Ţij	7. K.S.
	Cost		¢ą.			000'999	385,700	910,000 (estimated)	000'999	
noi	omplet	Date of			1901 1902	1917 1921	1905 1907	1933 1934	1918 1922	1903 1904
<b>प</b>	Date of launch		Big	Blg.	190	1917	190	1933	1918	1903
	Where built				Gothenburg	Gothenburg	Stockholm	Gothenburg	Malmö	Malmö
£10	Horse-power. Type of machinery and boilers				7000 Y. t.	22,000 (G.) Y.	12,444 Y. t	39,000 (G.)	22,000 (G.) Y.	7400 Y.
	Manara		10.		16.7	214	20·6	14.7	81 <del>1</del>	17-4
	Beam		ಕತ		₫.	8	48.6	9.09	19	\$
(a	wenze	Length (	£.		287	396-7	378	24	396-7	287
	brab. Juemec		tons 8000	7000	3361	7100	4200	4700	7100	3361
	NAME		Two in number	Tre Kroner	Gots Lejon	Drottning- Victoria *	Pygia	Gotland ↑	Gustav V *	Kanligheten
	Class		c.d.s.	ار د		ย่	<b>j</b> Di <b>gu</b> ized	Hangar Cruser	<b>S</b> e	c.d.s.

+ Under reconstruction as an A.A. ship.

* Reconstructed and modernised (1929-39).

### SWEDEN.—continued

	Com-	ment	330	<b>45</b> 0	287
		īg	500 500	8 8	<u>ଛ୍ଲା ।</u>
	Fuel Speed Coal		knots 18-0	22.5	16.5
		t obequoT	aub.		alb.
Armament		Guns	28.3-in., 85.9-in., 8 6-pr., 17-pr.	4 11-in., 65.9-in., 4 3-in., 26-pr., 6 m.	5 2 8.3-in., 6 5.9-in., K.s. 10 6-pr., 1 1-pr.
	Gun position	Secondary	in. K.8.	₹.8.	K, K,
	Pod	Heavy	in. 7 <del>1</del> K.S.	8 K.8.	7. R.S.
one		Bulk- bead	in. β <b>x.s</b> .	:	:
Armour		Side above belt	in. 6 <b>x.s</b> .	4 K.S.	:
		Belt Deck	'ä,⇔	1#	11
		Belt	i, θ χ.	8 K	K.8.
	Çost		લ્ય :	000,099	:
noi	omplet	Date of c	1907	1917	1903
ų	omai 1	o eta C	1905 1907	19151917	1901 1903
	Where built		Gothenburg	Gothenburg	Malmö
er?	-power nachin soilers	Type of 1	9000 Y.	20,000 tur. Y.	9000 Y.
	gpţ	ua1 (I	#81 81	214	17.7
	Beam		50.5 50.5	19	\$
(6		e) digns.I	ft. 313·6	392-7	287
	dard smemt	nat2 salqaib	tons 4250	6889	3361
	NAME		Oecar II *	Sverige *	Tapperbeten
	Class		c.d.s.	c.d.s.	Sport Digitiz

* Reconstructed and modernised (1929-39)

DEPOT SHIPS FOR SUBMARINES.—I building, 2,000 tons. Patricia (1926), 3,000 tons, 14 knots. Three building. MINELAYER.—Clas Flenning, 1,570 tons, 4 4.7-in., 4 M., 20 knots, 200 mines

ARGERIA DEFORM STATES.—Ale, 1,720 tons, 16 knots, 2 22-in.; Ymer, 3,450 tons, 18 knots, 4 3-in. Three building.

ARGERIA DEFORM STATES.—Ale, 1,720 tons, 16 knots, 2 22-in.; Ymer, 3,450 tons, 18 knots, 4 3-in. Three building.

ARGERIA DEFORM STATES.—Ascelb Bagge, Ornes, 738 tons, 2 4-7-in, 2 22-in.

DEFORM STATES AND S Digitized by GOOS

Minerwerens.—Starkodder, Styrbjorn, 360 tons, 15 knots, 2 1-5-in.; M. 1 and 3, 60 tons, 164 knots, 2 w.c.; Bremon, Holmon, Gronskar, Koster, Kullen, Ramskar, Sandon, Bredskar, Orakar, Vinga, Ulvon (1941), 17 knots, 2 4-5-in., 1 1-in. a.a.; Arbdina, Lansort (1889), 865 tons, 174 knots, 2 4-in.
Suyver, Vinga, Ulvon (1941), 17 knots, 2 4-5-in, 1 1-in. a.a.; Arbdina, Lansort (1889), 265 tons, 10 knots, 1 oranges, 1 ora 18-in. T 19-22, 34 tons, several others.

For Destroyers and Submarines, see Flotilla Tables.

## UNITED STATES.—BATTLESHIPS

		(6			Ç19			uor			Armour	TH.		₩ —	Armament			
NAME	brab tneme	xtreme	Beam		power. nachin soilers	Where built				 			Gun position	g		1	Fuel	
	nast2 palqaib	e) digna.I		us1(I	-estoH i to eqqT i bas		Date of	o to eded	Belt	Belt Deck	Side above belt	Bulk-	Heavy	Secondary Sign			<u>ਬ</u>	Comple
Montana	tons 58,000	널	£;	#		Philadelphia	Blg.	લ	ij	i	ij	ij	ië i	in. 16-in. guns.		12	knots tons	=
Ohio Maine						Philadelphia New York	Blg.											
New Hampshire						New York	Blg.						_					
Louisiana						Norfolk	Blg.											
Olinois	45,000	<b>68</b>	108	36	C.T.(G.)	Philadelphia	Blg.	2						9 16-in. guns, 20 5-in.,	20 5-in.,	8		
Lows	R 2 		::		::		19421	(100m) EF6						guns, 4 sircraft.	aircraft.			
New Jersey	-	:	:	:	•	Philadelphia	1942 1943											
imosti.	•	:	:	2	:	(Navy Yard)	0 i											
Wisconsin	:	•	:	2	2	Philadelphia (Navy Vard)	Blg.	•							_			
Washington	35,000	750	108	88	115,000	Philadelphia	1940 1941	941 17,500,000						9 16-in. guns, 20 5-in.,	30 5-in.,	8		
North Carolina	<b>:</b>		:	£	: :	New York	1940 1941	941 "						craft, 2 cats	pults.			
Indiana	•		÷	2	2	Newport News 1941 1942 Rethlehem	1941											
Alahama		٠ :	2		2	(S.B. Co.)	1942 1942											
South Dakots	: :					(Navy Yard) New York	1941 1942	: : : : : : : : : : : : : : : : : : : :										
Arkansas *	26,100	262	106	56	30,000	(S.B. Co.) New York	1911 1912	912 964,000		က		Ţ	n	64 12 12-in. (50 cal.), 16		<u> </u>	20.55100	00 670
					: :	(S. P. CS.)							j	5-m. (61 cal.), 63-m. (50 cal.) A.A., many smaller, 8 M., 1 cata-	), 53-4n. ., many , 1 cata-			

* Modernised 1926. Used as training ship.

\$ The sums given in this column are exclusive of the cost of armour and armament according to the system of making appropriations in the estimates.

# UNITED STATES.—BATTLESHIPS.—continued

	Fuel	Oil	929 929	570	3271	4570	3271	2000	3271	
	Speed		knots tons 21 4656	21.0 4570	211 3	21 4	21 3	20.5	21.5 3	
	1		1 2 2		64	64	64		<u>8</u>	_
	səqt	Torpedo to				~ ~ ~ ~ .				_
Armament		Guns	12 14-in. (50 cal.), 16 5-in. (38 cal.), many small A.A 2 cata-	pults, 3 floatplanes. 8 76-in. (45 cal.), 12 5-in. (51 cal.), 85-in. (25 cal.) A., many	Strain A.A., 2 cacapults, 3 floatplanes. 12 74-in. (50 cal.), 12 5-in. (51 cal.), 85-in. A.A., 2 catamilts, 3	floatplanes. 8 16-in. (45 cal.), 12 5-in. (51 cal.), 85-in. (25 cal.) A.A., many small A.A., 2 cata-	pults, 3 floatplanes.  12 74-in. (50 cal.), 12 5-in. (51 cal.), 85-in. A.A., many small	10 74-m. (45 cal.), 16 5-m. (38 cal.) A.A., many small A.A., 2 cal.	planes, 5 noar planes. 12 74-in. (50 cal.), 12 5-in. (51 cal.), 85-in. A.A., 2 6-pr., many	small A.A., 3 float
	in tion	Secondary	ig :							
	Gun position	Heavy	in. 18 K.S.	18 K.S.	18 K.S.	18 K.S.	18 K.S.	18–16 K.S.	18 K.S.	
our	Side Bulk- above head belt		.gi :					13½ K.S.	L	
Armour	Side above belt		.ij						1	-
		Deck	ij es		8		60	11-3	60	3
		Belt Deck	in. 14–8 K.S.	13½ K.S. -12	14 K.S.	13½ -12 K.S.	14 K.S.	13½-8 1½-3 K.S.	14 K.S.	
	Cost		£ 2,620,000	1,383,000	1,485,000	1,383,000	1,485,000	1,211,342	1,485,000	
noi	omplet	Date of o	1919 1921	1921 1923	1917 1919	1920 1921	1917 1917	1914 1916	1917 1918	
Date of launch			1919	1921	1917	1920	1917			
	Where built		Mare Island (Navy Yard)	New York (S.B. Co.)	New York (S.B. Co.)	Newport News	Newport News	Quincy, Mass. (Fore River)	New York (Navy Yard)	
Horse-power. Type of machinery and boilers		Horse- to adyT and	26,800 tur. electric	drive 27,300 B. & W. tur.	drive 40,000 B. & W. P.T.	27,300 B. & W. tur. (G.)	drive 40,000 B. & W. C.T. (G.)	25,000 Y. P. tur.	40,000 B. & W. electric	drive
	зцВr	nerC	ft. 30½	30 <del>1</del>	291	293	\$6Z	271	294	
	Beam		ft. 97½	971	1061	971	1064	108	1061	
(9	mertrem	Length (	ft. 624	624	624	624	624	283	624	
brachast? tnemesalqsib			tons 32,600	32,500	33,400	31,500	33,000	29,000	33,400	
	NAME		California	Colorado	Idaho ¶	Maryland	Mississippi q	Nevada §	New Mexico ‡	
	Class		ъ.	ъ.	o.	فه ced by GC	مام	ъ.	o.	

			670		
21 0 5200	21.0 2300	21.0 4656	21.0 5200	21.0 4570	
210	21.0	21.0	21.0	21.0	35
1	1	T	1	1	Ĺ.
14–8 6 10 74-in. (45 cal.), 16 K.S. K.S. 5-in. (51 cal.), 8 3-in. (50 cal.) A.A., many small A.A., 1 cata-	pult, 2 Hoatplanes. 12 T4-m. (45 cal.), 12 5-in. (51 cal.), 85-in. (25 cal.) A.A., many small A.A., 2 cata-	pults, 3 floatplanes. 12 T4-in. (50 cal.), 16 5-in. (38 cal.), many small A.A., 2 cata- pults, 3 floatplanes.	6 10 74-in. (45 cal.), 16 5-in. (51 cal.), 8 3-in. (50 cal.) A.A., many small A.A., 1 cata-	putt, 3 floatplanes. 8 76-in. (45 cal.), 12 5-in. (51 cal.), 85-in. (25 cal.) A.A., many	small A.A., 2 catapults, 3 floatplanes.
K.S. K	18 K.S.	18 K.S.	14-8 к.s. к	18 K.S.	
	18 K.S	18 K.S	10 14 K.S. K.	18 K.S	
9 10 K.S. K.S.			9 1 K.S. K		
 ×	m	60	8		
		14-8 K.S.		s1	
— 12	14 K.S.		12_4 K.S.	13½-1 K.S.	
1912 1914 1,315,114 12-4	1,485,000	2,620,000	1,166,000	1,383,000	
1914	1916	1920	1914	1923	
1912	1915 1916	19191920	1912 1914	1921 1923	Blg.
28,100   New York B. & W. (Navy Yard) recip.	Newport News	New York (Navy Yard)	Newport News	Newport News	New York (S.B. Co.)
28,100 B. & W. recip.	40,000 B. & W. Cur. tur.	26,800 B. & W. Tur. electric	28,100 recip.	27,300 B. & W. tur.	drive tur.
56	88	30\$	26	30	
106	1061	972	106	974	
573	808	624	573	624	
27,000   573	33,100	32,300	27,000	31,800	27,000
b.   New York *	Pennsylvania †	Tennessee	Texas *	West Virginia	Alaska Guan Hawaii    Philippines    Puerto Rico    Samoa
Ď.	ъ.	ъ.	p.	b.	g g g g g g Digitized by

The battleship Wyoming was converted to a training ship (speed 18 knots) in 1931 in accordance with London Naval Treaty.

* Modernised in 1927. Modernisation included fitting of bulge protection, protection of decks against aerial attack, conversion to oil burning, installation of 3-in. a.a. battery, and lition of catapults. Cost about £600,000 each ship. Displacement increased about 3000 tons.

† Modernised in 1931. Modernisation included fitting bulges, reboilering, increasing elevation of turnet guns, replacing former anti-aircraft batteries by 5-inch a.a. guns, new masts and The battleship Wy ** Modernised in 1. addition of catapults. new fire control.

Taken in hand for modernisation 1931. New Mexico and Mississippi completed 1933. Idaho completed 1934. Modernisation includes fitting increased deck protection, increasing elevation of turret guns, installation of eight 5-in. A.A. guns, reboilering, fitting of new turbines (the electric drive in New Mexico has been replaced by turbine machinery), alteration to masts and fitting of bulges, and fitting of bulges, and fitting of bulges, deck protection, tripod masts, increasing elevation of turret guns, fitting a new 5-in. anti-aircraft battery. California, Nest Virginia, Colorado, Maryland, and Tennessee have been modernised recently.

UNITED STATES.—AIRCRAFT CARRIERS

Com-	ple- ment			3		E E		0),70		2		
Fuel	Oil	tons										
i	Speed	knots										
1	Tor- pedo tubes		11.00	12	II.		[ <del> </del>	- 6			Menty.	Storage of
Armament	Guns		100	Many A.A.					16 5-in., many small	11 11 11 11 11 11	10000	H. H. D (2) 18. H.
our	Belt	ii.		- ,						À.		12
Armour	Deck	ii.										K N N
	Cost	43										
Date	ple- tion			1943			1943		1943	OFOT	1944	
Date	of			1943			1943	Bldg.	Bldg. 1943	Bldg.		_
	Where built	Newp't News	Brooklyn	Navy rard New York S.B. Co., Camden	N.J.			Portsmouth	Newp't News S. B. Co.			
Horse-	Type of machinery and boilers											
	Draught	ft.										
	Beam	ft.						è				
Length	(ex- treme)	ft.										
Standard Length	displace- ment	tons 45,000	45,000						27,000	2 2	:	
	NAME	-	田	*Bataan Belleau Wood Lexington	Cowpens Independence Langley	Monterey	San Jacinto Hornet	Shangri-La	Randolph Yorktown	Intrepid	Kranklin Hancock	
	Class	a.c.	a.c.	9. 6 0. 6 0. 6	a a c	0 0 d	10( p.c.	DQ a.c.	S 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	a.c.	a.c.	

Bunker Hill Wasp Thoonderoga Bennington Bon Komme Richard Boxr Crown Point Reprisal Lake Ghamplain	ard						Steel, Fore River	1943 1943 Bldg. Bldg.	1943						
Enterprise	19,800		₹608	83	212	120,000 (G.) B. & W.	Newp't News	1936	1938			8 5-in. A.A. guns, 16 7-7-in. M. A.A., 76 aircraft, 1 catapult.	1	34	
Ranger	14,500	_	692	80	193	53,500	Newp't News	1933	1934	about 4,000,000	1	8 5-in. A.A., 50 M.G.,	1	\$6Z	
Saratoga	33,000		888	1054	31	(G.) 180,000 tur. electric (W.F.)	N.Y. Ship- building Co.	1925	1927	000'000'6	co.	12 5-in. (25 cal.) A.A., many small A.A. Operates about 80 landplanes. 1 cata-nult.	1	33.9	7100
Attamaha		4,	492	₹69		8500						1 or 2 5-in. guns,		164	
Block Island		-	: :	2 :								many small A.A., 30 fighters.			
Bogue			"			**									
Card			**	33		**									
Charger	_		33	"		44									
Copapee			"	"		"									
Core	_		**	"		11									
Crostan	_	_	**	**		33									
Long Island	_		33	33		**									
Nassan	_		"	"				_							

* Laid down as 10,000-ton cruisers, 32 knots.

UNITED STATES.—CRUISERS

	Com- ple- ment	
	Fuel	tous
	Speed	knots
	Tor- pedo	
Armament	Guns	9 8-in., 12 5-in., many small a.a., 4 aircraft, 2 catapults. 12 6-in., 12 5-in., many small a.a., 4 aircraft.
Armour	Gun posi-	.ij
Arm	Belt	.ij
Cost	(exclusive of armament)	42
	of com- ple- tion	1943 1943 1942 1942 1942 1942 1942 1942
	Date of launch	1942 1942 1943 1943 1941 1941 1941 1948 1948 1948 1948 1948
	Where built	Bethlehem, Fore River
Horse-	power. Type of machinery and boilers	(G.)
	Draught	ft
	Beam	ti
;	Length (ex- treme)	ft. 600
	Standard I	tons 13,000 13,000
	NAME	Baltimore Boston Fittsburgh St. Paul Baltimore Albany Rochester Columbus Des Moines Canberra Quincy Northampton Los Angeles Chicago And others Columbia Montpelier Denver Amsterdam Santa Fé Santa Fé Santa Fé
	Class	Baltimore Class Class Class Class Class

								33	ле 32½ 1650
				12 6-in.	12 6-in.			12 5-in. guns. 27-in. (Q.)	9 8-is., 8 5-is. A.A., None many small A.A., 2 catapults, 4 air craft.
1943	1943	1944		Bldg.	1944	1943	1944	1942 1942 1943 1944 1944 1944	1939
	1943	1943	Bldg.	<u> </u>	1942 1943 Bldg.	1943	1943	1941 1942 1943 1943 1943 11 1943 11 11 11 11 11 11 11 11 11 11 11 11 11	1937 11
8.B. Co. 1942		Bethlehem, Fore River		Federal, S.B. Co.	Gramp, S.B. 6		Philadelphia (Cramp)	Bethlehem (Quincy) Bethlehem, (SanFrancisco) " " "	Philadelphia Navy Yard
								75,000	100,000 (G.)
-								164	<b>1</b> 61
								ž::::::	<b>61</b>
					· · · · · · · · · · · · · · · · · · ·		-	530 (on w.l.)	600 (on w.l.)
								9000	
Cleveland	Bilord Violations	Plant Passdons	Topeka Providense Manchester	Cheyenne Duluth	Miami Wilkes-Berre Oktahoma City Little Rock Galveston	Houston	Astoria Vincennes	San Diego San Juan Oakkand Reno Spokane Tueson Juneau	Wichita

UNITED STATES.—CRUISERS—continued

Tor- pedo tubes None 324 2  None 32.7 1
Belt   Gun   Guns   Pedo   P
Armament  ii. Guns Pedo tubes  15 6-in., 8 5-in. A.A., None 32‡ many small A.A., 4 seaplance, 2 cata- pults.  15 6-in., 8 5-in., 10 M., 4 seaplance, 2 cata- pults.  16 6-in., 8 5-in., 10 M., 4 seaplance, 2 cata- pults.  18 6-in., 65 cal.), 8 5- in. (25 cal.), 8 5- i
Tor- pedo tubes None \$2\$  None \$2\$  32\$

611	*		450											
32½   1500   611	"	1500	1800										3000	
321	*	321	33.7										32.7	
			91.5	(£)										
9 8-in. (55 cal.), 4 5-in. (25 cal.) a.a., many small a.a., 2	catapults, 4-6 seaplanes.	9 8 in. (55 cal.), 4 5- in. (25 cal.) a.a., many small a.a., 2 catapults, 4-6 sea-	10 6-in. (12 6-in. in	several small A.A.,	pults, 30 mines.								10 8-in. (55 cal.), 8 5-	many small A.A., 2 catapults, 4 planes.
ω  c ₁	ကျေ	1 to   01	es	<b>≠</b> 0	120	m	. 14			es	14		8	12
1929   1930   2,230,000	2,290,000	2,170,000	1,730,000	1,742,000	1,584,000	1,823,000	1,810,000	1,838,000	1,794,000	1,823,000	1,616,000	1,742,000	3,400,000	
1930	1931	1931	1924	1924	1923	1924	1924	1925	1923	1923	1924	1923	1929	1930
1929	1930	1930	1921	1921	1922	1923	1923	1924	1921	1920	1923	1921	1929	1929
American Brown Boveri Elec.	Corp. Puget Sound	Newport News S.B. & D.D. Co.	Tacoma	Philadelphia	Bethlehem S.B. Co.,	Philadelphia	Philadelphia	Tacoma,	Philadelphia	Tacoma,	Bethlehem S.B. Co.,	Quincy Philadelphia	New York	S.b. Co. Navy Yard, New York
107,000 P.T.(G.)	2	107,000 P.T.(G.)	90,000	F.1.(G.)	90,000 C T.(G.)	000,06	r.1.(G.)	î		90,000	(Raleigh) C.T.(G.)		107,000	F.T.(G.)
16.3-		16·3- 17·6	134	134	134	131	*	*		131		"	16	
99	2	99	55 ₃	<b>25</b> §	55 <u>1</u>	55⅓		*	•	553		r	<b>†</b> 29	
<b>‡</b> 009		<b>1</b> 009	5554	5553	555 <del>1</del>	555 <del>1</del>				5554	•	2	₹98g	
9200	9050	9050	7050	7050	7050	7050	ı	*	"	7050	1		9100	
Chester	Louisville	Augusta	Cincinnati	Concord	Detroit	Trenton	Marblehead	Memphis	Milwaukee	Omaha	Raleigh	Richmond	Pensacola Salt Lake City	Pensacola
Chester Class			Omaha	CIES					D	igitiz	ed by	Go	Pensacola	sseles!

# STATES.—MISCELLANEOUS CRAFT UNITED

FRIGATES.—About 80 in number, 1,015 tons.
GUNEDATES.—Thula (1923), 1,270 tons, 12 knots, 3 4-in., 2 3-pr., 3 1-pr.; Sacramento (1914), 1,140 tons, 12k nots, 2 4-in., 1 8-in.; Charleston, and Erie (1936), 2,000 tons, 20 knots, 4 6-in., 4 in., 1 seaplane; Dubuque and Paducah (1905), 1,000 tons, 13 knots, 4 4-in., 1 3-in.; Vixen, Jamestown, Williamsburg, Beaumont, San Bernardino, Dauntless, ex-Yachte. number similar to British "Flower" Class Corvettes. MINIMAYERS. -8 light minelsyers, cz-T.B.D.s., 1,160-1,190 tons, 35 knots, 4 4-in., 1 3-in. A.A., 80 mines. A number of Converted Merchant ships: Terror, Catakill, Ozark (1942),

MINESWEEPERS.—21 in number, "Bird" class (1918, 1919), 840 tons, 1,400 H.P., 14 knots, 2 3-in. A.A. guns authorised but not carried. 16 ex-Destroyers, 1,100 tons (approx.). Over 50 Raven Class, 700 tons, 18 knots. 19 Bullfinch Class, 300 tons, Diesel. 28 Adroit Class, 300 tons (approx.), Diesel. Over 450 motor minesweepers, 280 tons, Diesel, 1 3-in. 70 Accentor Class, 974 ft., Diesel. 40 Converted Trawlers, 100-200 tons.

SEATLANT TENDERS.—Albemarle, Curritorek, Norton Sound, Pine Island, Puget Sound, 8,625 tons, 18 knots, 45-in., 24 seaplanes; Barnegat, Biscayne, Casco, Mackinso, Humboldt, Matagorda, Absecon, Chincoteague, Coos Bay, Half Moon, Mobsack, Oyster Bay, Rockaway, San Pablo, Unimak, Yakutat, 1,650 tons, 20 knots, 25-in.; Wright (1921), 8,675 tons, 15 knots, 15 knots, 25-in.; several converted Merchant ships, 8,000 tons gross; 14 converted Destroyers: Sandpiper, Gannet, Thrush, Swan, Heron, Pelican, Avocet, Teal, Lapwing (1918–1919), 840

Coast Gvard Carrows, 13-in; 4 in number, 1,500 tons, 26 in, 2 6-pr., 1 seaplane; 6 in number, 1,000 tons, 13\frac{1}{2} knots, 2 3-in.; 10 in number, 1,500 tons, 16\frac{1}{2} knots, 2 3-in.; 10 in number, 1,500 tons, 16\frac{1}{2} knots, 2 3-in.; 10\frac{1}{2} knots, 2 3-in.

Ourses.—Cimarron, Platte (1939), 16,000 tons, 18 knots, 4 5-in.; Brazos (1920), 5,400 tons, 14 knots, 4 5-in., 2 3-in.; Laramie, Raweah, Mattole (1920), 4,410 tons, 11 knots, 2 5-in., 3 3-in.; Rapidan (1920), 5,375 tons, 104 knots; Manmee, Guyama, Kanawia (1915), 4,900 tons, 14 knots, 4 5-in., 4 4-in.; Laramie, Kaweah, Mattole (1920), 4,410 tons, 11 knots, 2 5-in., 3 3-in.; Robert L. Barnes (1917), 1,630 tons, 84 knots; Sabine, Salamonie, Kaskaskia, Sangamon, Chemung, Chenango, Guadalupe, Santee, Suwannee, and others.

Anaturizon Ships.—Pyro, Nitro, 7,025, 13 knots, 4 5-in., 2 3-in.; Mount Baker, Lassen, Shasta, Rainier, Sangay, Maxama.

Degravore Tenyders.—Pyro, Nitro, 7,025, 13 knots, 4 5-in., 2 3-in.; Mount Baker, Lassen, Shasta, Rainier, Sangay, Maxama.

Degravore Tenyders.—Pyro, Nitro, 7,025, 13 knots, 4 5-in.; Mount Baker, Lassen, Shasta, Rainier, Sangay, Maxama.

Degravore Tenyders.—Pyro, Nitro, 7,025, 13 knots, 16 knots; Picdmont, Sierra, Yosemite and Cascada, 16,700 tons, 104 knots, 8 5-in.; Bednot, Sierra, Yosemite and Cascada, 16,700 tons, 104 knots, Borry, Howard W. Gilmore, Shankarne Tenynes.—Holland (1926), 8,100 tons, 16 knots, 6 5-in., 4 3-in. A.A., 2 6-pr.; Beaver (1910), 4,670 tons, 164 knots, 4 5-in.; Fulton, Sperry, Howard W. Gilmore, Proteus, Orion, Nereus, 9,000 tons, 16 knots, Pelias, Antaeus, Griffin, ez-Merchant Vessels. REPAR SHIPS.—Medusa (1924), 8,125 tons, 16 knots, 4 5-in., 2 8-pr.; Vestal, Prometheus (1909), 6,625 tons, 16 knots, 4 5-in., 1 3-in.; Vulcan, Ajax, Hector, Jason, 9,500

Transing Ship.—Wyoming (1912), 19,700 tons, 18 knots, 6 12-in., 16 5-in., 8 3-in.; Wheeling, 870 tons, 13 knots, 1 4-in.; Wilmington, 1,280 tons, 15 knots, 8 4-in. 5 stores kips, 50 Cargo ships, 9 Patrol vessels (Eagle class, 430 tons, 18 knots, 2 4-in., 1 3-in. a.a.), 85 tugs, 10 cable ships, 7 Auxiliaries, 20 Yachta, 48 Net Tenders. Hoperara. Share,—Solace (az-Iroquois), 1927, 6,200 tons gross, 19 knots, 400 beds; Relief (1920), 7,275 tons, 15 knots, 535 beds; Comfort, Hope, Mercy, 10,000 tons Refuge, 6,000 tons. Survey Vessels.—Sunner (1915), 2,900 tons, 14 knots, 4 5-in., 2 3-pr.; Bowditch (1929), Hannibal.

Survey Vessels.—Sunner (1915), 2,900 tons, 14 knots, 4 5-in., 2 3-pr.; Bowditch (1929), Hannibal.

Survey Vessels.—Ortolan, Falcon, Mallard, Widgeon, Chewink (1918-19), 1,000 tons, 14 knots; Chantilleer, Conceal, Florikan, Greenlet, 2,000 tons. TRANSPORTS.—Wakefield (ex-Manhattan), 24,000 tons. A number of other converted liners.

For Destroyers and Submarines, see Flotilla Tables.

# SHIPS OF THE LESSER NAVIES.

### BELGIUM.

Corvettes.—H.M.S. Buttercup and H.M.S. Godetia are manned by the R.N. Section, Belge.

SAILING TRAINING SHIP.—Mercator.

### BULGARIA.

Motor Torpedo Boats.—2 in number (Lurssen, 1939), 60 tons, 30 knots, 1 m.a.a., 2 21-in. torpedo tubes.

PATROL VESSELS.—Derzki, Khrabri, and Strogi (ex-French, 1907-08), 97 tons, 17 knots, 2 1.85-in., 1 m., 2 18-in. torpedo tubes.

MINESWEEPERS.—2 in number (ex-French, 1918), 350 tons, 17 knots. Training Ships.—Tsar Assen (ex-Dutch, 1912), 240 tons, 9 knots, 2 2·6-in., 1 m.; Kamcia (1898), 10 knots; Simeon, 600 tons, 2 3-in.

Motor Boats.—Vzrif and Capitan Minkoff (ex-French, 1918), 40 tons, 14 knots, 2 m.; Belmoretz and Chernomoretz (ex-French, 1918), 77 tons, 17 knots, 1 1.85-in., 2 m.

### CHINA.

Gunboats.—Chang Ning, Cheng Ning, Wu Ning, Sui Ning, Wei Ning, and Ye Ning (Shanghai, 1933–34), 300 tons, 11 knots, 2 2·25-in., 3 m.; Min Chuan (Shanghai, 1931), 460 tons, 16 knots, 1 4·7-in., 1 4-in., 1 3-in., 2 2·24-in.; Chu Chien (Kobe, 1906); Chu Kuan and Chu Tung (Kobe, 1907), 11 knots, 1 3-in.; Yung Sui (Shanghai, 1929), 600 tons, 18 knots, 1 6-in., 1 4·7-in., 3 3-in., 2 2·24-in., 2 1·5-in. A.A., 4 m.; Tutuila (Shanghai, 1928), 370 tons, 14½ knots, 2 3-in., 10 m.; Kiang Yuan, 550 tons.

RIVER GUNBOATS.—Ying Hao (ex-Sandpiper, 1933), 185 tons, 111 knots, 1 3.7-in. howitzer, 1 6-pdr.; Ying Teh (ex-Falcon), 372 tons, 15 knots, 1 3.7-in. howitzer, 2 6-pdr.; Ying Shan (ex-Gannet, 1925), 310 tons, 16 knots, 2 3-in. H.A.; Kiang Hsi and Kiang Kan (Germany, 1912), 140 tons, 9 knots; Mei Yuan (ex-USS Tutuila).

Torpedo Boat.—Hu Chun (Kobe, 1908), 96 tons, 20 knots, 1 1.85-in., 1 1.5-in., 8 14-in. torpedo tubes.

ARMED LAUNCHES.—15 in number.

Armed Transports.—25 in number

PATROL VESSELS.—4 in number.

### COLOMBIA.

Destroyers.—Caldas and Antioquia (Yarrow, 1934), 1,282 tons, 319 ft. B.P., 31 ft. beam, 36 knots, 4 4·7-in., 3 1·5-in. A.A., 2 depth charge throwers, 8 21-in. torpedo tubes, 296 tons of oil fuel, 140 complement.

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Gunboats.—Mariscal Sucre (Yarrow, 1909), 500 tons, 28 knots, 2 3-in., 8 m.; Cordoba (ex-French, 1919), 450 tons, 16 knots, 4 3-in.; Pichincha, Carabobo, and Junin (ex-French, 1925), 200 tons, 18 knots, 1 3-in., 2 m.; Barranquilla and Cartagena (Yarrow, 1980), 140 tons, 13.5 knots, 2 3-in., 8 m.; A, B, C, D (ex-German L.M. 15, 17, 19, 20, 1918), 12 tons, 28 knots, 2 m.; Nos. 1, 2, 3, 4 (Yarrow, 1913), 20 tons, 12 knots, 1 1-pdr.

RIVER GUNBOAT.—Presidente Mosquera, 200 tons, 2 1.5-in.

TRANSPORTS.—General Mosquera (Caledon Shipbuilding Co., 1910), 3,500 tons, 2 3.5-in.; Bogota (ex-German, 1919), 500 tons, 16 knots, 1 3.5-in., 2 8-in., 2 M.

Training Ship.—Cucuta (ex-U.S.A., 1913), 5,378 tons gross, 10 knots.

### COSTA RICA.

Coastal craft only.

### CUBA.

LIGHT CRUISER.—Cuba (Cramp, Philadelphia, 1911), 2,055 tons, 18 knots, 6,000 H.P., 2 4-in., 6 3-in. H.A., 4 6-pdr., 4 3-pdr., 2 M., 250 tons of coal.

Gunboats.—General Zagas, 500 tons, 2 1-pdr.; Capitan Fernandez Quevedo (Havana, 1932), 115 tons, 12 knots, 1 3-in. H.A., 2 1-pdr.; Habana, Pinar del Rio, Villas, and Matanzas (Havana, 1912), 80 tons, 12 knots, 1 1-pdr.; 24 de Febrero and 10 de Octubre (J. S. White, 1911), 218 tons, 12 knots, 3 3-pdr.; Baire (Danzig, 1906), 500 tons, 14 knots, 4 3-in., 2 3-pdr., 1 m.; Yara (Middlesbrough, 1905), 450 tons, 12 knots, 1 3-in. H.A., 2 6-pdr.; 20 de Mayo (Glasgow, 1895), 200 tons, 12 knots, 2 3-pdr., 1 1-pdr.; Enrique Villuendus (ex-U.S.A., 1899), 178 tons, 16 knots, 2 3-pdr.

Training Ship.—Patria (Cramp, Philadelphia, 1911), 1,200 tons, 16 knots, 2 3-in., 4 6-pdr., 4 3-pdr.

TRANSPORT.—Carcorbe.

### DOMINICAN REPUBLIC.

COAST GUARD CUTTERS.—3 in number (ex-U.S.A. C.G. 110, 144, 302) (1924), 37 tons, 13.5 knots, 11-in.; three others (ex-U.S.A.).

### ECUADOR.

PATROL VESSELS.—Tarqui, 50 tons, 1 torpedo tube; 3 others (ex-U.S.A.).

Training Ship.—Presidente Alfaro (Southampton, 1917), 1,030 tons, 16 knots, 2 8-in.

Gunboat.—Abdon Calderon (ex-Cotopaxi) (1884), 700 tons, 10.5 knots. Transport.—Patria (Lighthouse Service).

DESPATCH BOAT.—Atahualpa.

### EGYPT.

Patrol Vessels.—Raqib (Alexandria, 1988), 15 knots, 1 1.46-in.; Al Sarea (J. S. White, 1987), 18 tons, 36 knots, 1 1.46-in.; El Amira Fawzia (Swan Hunter, 1929), 2,640 tons, 14 knots, 2 3-pdr.; El Amir Farouq (Hawthorn Leslie, 1926), 1,441 tons, 17 knots, 1 6-pdr., 2 m.; Mabahiss (Swan Hunter, 1930), 618 tons, 11 knots, 1 3-pdr.



Training Ship.—Abdel Monaym (Clydebank, 1902), 610 tons, 18.5 knots.

Inspection Vessel and Store Carrier.—Naphtys (Kiel, 1905), 650 tons, 7.5 knots.

TRANSPORT.—Sollum (ex-Syringa, Workman Clark, 1917), 1,290 tons, 16 knots, 1 3-pdr.

ROYAL YACHT.—Mahroussa (Poplar, 1865), 4,561 tons, 16 knots.

COASTAL MOTOR BOATS.—Darfeel and Noor El Bahr (Thornycroft, 1926), 20 tons, 17 knots, 1 1-46-in.; Qamar, 28 tons, 11 knots; El Hoot, 24 tons, 7 knots.

### ESTONIA.

TORPEDO BOAT.—Sulev (ex-German, 1917), 200 tons, 26 knots, 2 3-in., 2 18-in torpedo tubes, 10 mines.

Submarines.—Lembit and Kalev (Vickers, 1937), 620/820 tons, 13½/8½ knots, 1 1.57-in., 4 21-in. torpedo tubes, 20 mines.

MINELAYERS.—Suurop and Ristna (1906), 500 tons, 12 knots, 1 3-in., 1 1-pdr.

ICEBREAKERS.—Suur Toll (Stettin, 1914), 4,000 tons, 15 knots; Tasuia (1914), 1,100 tons; Jaan Poska (1929), 250 tons, 11 knots.

PEIPUS LAKE GUNBOATS.—Ahti (1908), 144 tons, 10 knots, 2 1.5-in., 2 1-pdr.; Tartu, 108 tons, 12 knots, 2 1.5-in., 2 m.

Gunboat.—Laine (1915), 450 tons, 12 knots, 2 3-in.

RIVER GUNBOAT.—Mardus (1911), 100 tons, 10 knots, 2 3-in., 2 m. MINESWEEPERS.—Keri (ex-Kalev) and Vaindlo (ex-Olev) (1914), 50 tons, 9 knots, 1 3-pdr.; Tahkona (1919), 45 tons, 12 knots.

Tug.—Tallin (1900), 100 tons, 10 knots.

TENDERS.—Kompass (1919), 300 tons, 9 knots; Sakala (1906), 30 tons, 8 knots.

### FINLAND.

Armoured Vessels.—Väinämöinen (Crichton-Vulcan, 1932), 300 ft. length, 54 ft. beam, 3,900 tons, 15 knots, 4 10-in., 8 4·1-in. A.A., 4 m., 2-in. armour belt.

MOTOR TORPEDO BOATS.—Sisu and Hurja (ex-Italian, 1920), 13 tons, 25 knots, 2 m., 2 18-in. torpedo tubes; Isku (1925), 54 ft. length, 11 tons, 25 knots; Syöksy, Nuoli, Vinha, and Raju (1929), 13 tons, 35 knots, 2 m., 2 18-in. torpedo tubes. 5 ordered in U.S.A., March, 1940.

Submarines.—Iku-Turso, Vetehinén and Vesihisi (Abo, 1930), 490/710 tons, 14.5/8.5 knots, 1 3-in., 4 21-in. torpedo tubes, 20 mines; Vesikko (Crichton Vulkan, Abo, 1933), 250/300 tons, 12/7 knots, 1 m., 3 21-in. torpedo tubes; Saukko (Helsingfors, 1930), 100/136 tons, 8/5.5 knots, 1 m., 2 18-in. torpedo tubes, 6 mines.

GUNBOATS.—Turunmaa (ex-Russian Orlan, 1918), 342 tons, 14 knots, 2 3-in., 5 6-pdr.; Uusimaa (ex-German Beo) and Hämeenmaa (ex-German Wulf, 1918), 400 tons, 15 knots, 2 4-in., 1 1.5-in. A.A.; Vakava and Aallokas (1935).

MINELAYERS.—Pommi, Paukku, Lieska, Miina, Loimu (1916), 80 tons, 8 knots, 2 m., 24 mines; Vakava and Klercker, 800 tons.

MINESWEEPERS.—Rautu (ex-Russian Murman, 1917) and Vilppula (1916), 165 tons, 12 knots, 2 3-in., 1 1.5-in. A.A.; Ahven, Kiiski, Muikku, and Sarki (1937), 17 tons. 10 knots.

Salvage Vessel.—Mursu (ex-Stannum) (1902), 615 tons gross, 8 knots.

Submarine Depot Ship.—Louhi (ex-Russian Voin, 1917), 640 tons, 11 knots, 2 1.85-in., 150 mines.

MOTOR LAUNCHES.—Haukka, A.37, A.38, A.40, A.42, A.43, A.45, A.F.2, B.3, B.V.A. and B.V.D. (1934), 9-25 tons, 8-10 knots, 1 m. PATROL BOATS.—V.M.V. 1, 2, 5, 6 (1931), V.M.V. 8-17 (Germany,

1935), 30 tons, 25 knots, 1 ·75-in.

Training Ship.—Suomen Joutsen (St. Nazaire, 1902), 3,000 tons, 6 knots.

ICEBREAKERS.—Sisu (Helsingfors, 1939), 2,000 tons, 15 knots, 2 4-in.; Otso (1936), 800 tons, 13 knots; Jääkarhu (1926), 4,825 tons, 15 knots; Sampo (Armstrong, 1899), 1,850 tons, 15 knots, 3 4.7-in.; Tarmo (ex-Sampo II) (Armstrong, 1907), 2,400 tons, 14 knots; 3 4.7-in.; Murtaja (Stockholm, 1890), 820 tons, 11 knots, 1 4.7-in.; Apu (Kiel, 1899), 600 tons, 13 knots, 2 4.7-in.; Voina (Sandvikens, 1924), 2,000 tons, 14 knots, 1 4.7-in.

### HAYTI.

Special Service Vessels.—Nord Alexis (1891), 1,230 tons, 14 knots. 2 4.7-in.; Veretieres (1889), 270 tons, 9 knots, 2 m.; 17 Décembre, 851 tons; Pacifique, 488 tons, 14 knots.

### HUNGARY.

Patrol Vessels.—Debreczen, Gyor, Baja, and Sopron (Budapest, 1918), 140 tons, 15 knots, 2 2.75-in., 2 m.; Kecskemet and Szeged (Budapest, 1915), 133 tons, 15 knots, 4 2.75-in., 2 m.

Auxiliary Vessels.—Csobánc (1926), 300 tons, 8 knots; Körős (1916), 170 tons; Maros (1927), 40 tons; Mecsek, 35 tons.

Motor Boats.—Honved, Huszar, and Tuzer (1916), 17 tons, 7 knots, 2 m.; 2 in number, 30 tons; 10 in number, 10 tons.

Training Ship.—Badacsony (1909), 230 tons, 10.5 knots.

### ICELAND.

FISHERY PROTECTION VESSELS.—Aegir (1925), 500 tons, 14 knots, 1 2.24-in.; Thor (ex-German, 1922), 300 tons, 10 knots, 1 2.24-in.; Odinn (1938), 72 tons, 11 knots, 1 1.85-in.; Esja, 1,347 tons (gross).

### IRAQ.

Patrol Vessels.—Nos. 1, 2, 3, 4 (Thornycroft, 1937), 100 ft. length, 64 tons, 12 knots, 1 3.7-in. howitzer, 4 m.

YACHT.—Panfield X (ex-Sans Peur, J. Brown, 1923), 1,200 tons, 18 knots.

Tug.—1 (ex-British).

# LATVIA (U.S.S.R. Baltic Fleet).

SUBMARINE DEPOT SHIP.—Varonis (1908), 250 tons, 10 knots. GUNBOAT.—Virsaitis (ex-German, 1917), 380 tons, 16 knots, 2 8-in. 2 6-pdr., 1 8-in. H.A., 1 torpedo tube. SURVEYING VESSEL.—Hidrografs (Danzig, 1918), 450 tons, 10 knots.

# LITHUANIA (U.S.S.R. Baltic Fleet).

Patrol Vessel.—Prezidentas Smetone (ex-German, 1917), 500 tons, 17 knots, 2 3-in., 3 m.

### MANCHUKUO.

DESTROYER.—Hai Wei (ex-Japanese Kashi, Maizura, 1917), 755 tons, 31.5 knots, 3 4.7-in, 3 m., 6 18-in. torpedo tubes.

GUNBOATS.—Chingjen and Tingpien (Harima, 1935), 290 tons, 13 knots, 2 4.7-in., 3 m.; Shun T'ien and Yang Min (Harima, 1934), 270 tons, 12 knots, 2 4.7-in. A.A., 3 m.; Li Sui (ex-German, 1910), 270 tons, 13 knots, 2 2.24-in., 2 m.; Li Chi (ex-German, 1904), 270 tons, 13 knots, 1 8-in., 4 m.; Kuang Ning, Kuang Ch'ing, and Chiang T'ung (1900), 200 tons, 9 knots, 1 8-in., 4 m.; Ta T'ung and Li Min (Kobe, 1933), 65 tons, 10.5 knots, 3 m.

Armed Launches.—Chi Min (Kawasaki, 1934), 20 tons, 10 knots, 2 M.; En Min, Hui Min, P'u Min (Kawasaki, 1933), 15 tons, 10 knots, 2 m.

PATROL BOATS.—Hailung and Haifeng (Kawasaki, 1983), 184 tons, 14 knots, 2 3.1-in., 2 m.; Hai Kuang, Hai Jui, Hai Jung, Hai Hua (Kawasaki, 1933), 42 tons, 12 knots, 1 2.24-in., 2 m.; Daichi Kaihen and Daini Kaihen (Yokohama, 1933), 42 tons, 15 knots, 2 м.

### MEXICO.

SLOOPS.—Durango (Valencia, 1936), 1,600 tons, 20 knots, 4 4-in., 2 twin 1-in. pom poms, 2 quadruple ·5-in. M., can carry 500 men and 80 horses; Potosi (Cadiz, 1935), Queretaro and Guanajuato (Ferrol, 1935), 1,200 tons, 20 knots, 3 4-in., 2 twin 1-in. pom poms, 2 quadruple ·5-in m. a.a., can carry 250 men and 20 horses.

Gunboats.—Nicolas Bravo (Odero, 1904), 1,227 tons, 12.3 knots, 2 4-in., 4 6-pdr., 2 m.; G. Nos. 20-29 (Bilbao, 1935), 130 tons, 26 knots, 1 twin 5 pom pom, 1 quadruple 1-in. pom pom.

Transports.—Progreso (Genoa, 1907), 1,590 tons, 13 knots, 4 6-pdr., 2 m.; Bolivar (1920), Washington (1920), Moctezuma (1919), Coahuila and Jalisco (Philadelphia, 1916), 5,794 tons, 10.5

OIL TANKER.—Mexico (1913), 2,559 tons (gross).

PATROL BOATS.—Mazatlan, Acapulco, and Vera Cruz (Canada, 1918). 486 tons, 8 knots, 1 2·2-in., 2 1·5-in., 2 м.

### NICARAGUA.

GUNBOAT.—Momotombo, 400 tons, 2 3-in., 1 6-pdr. Patrol Boat.—1 in number (ex-U.S.A., CG274) (1924), 37 tons, 75 ft., 13.5 knots, 1 1-pdr.

### PARAGUAY.

Gunboats.—Paraguay and Humaita (Genoa, 1931), 636 tons, 17 knots, 4 4.7-in., 4 3-in. H.A., 2 M.; Capitan Cabral (Haarlem, 1907), 120 tons, 10 knots, 1 3-in., 2 6-pdr., 2 M.; Taguari (Hosking, 1910), 150 tons, 10 knots, 4 3-in., 2 1.46-in.

DESPATCH VESSEL.—Teniente Herreros (Conrad, 1908), 100 tons, 12

knots, 1 3-in., 2 1-pdr., 2 m.

## PERSIA (IRAN).

Patrol Vessels.—Moti (ex-Karkas), Lal (ex-Simorgh), Hira (ex-Chahbaaz), and Nilam (ex-Chahrokh) (Naples, 1932), 325 tons, 15 knots, 900 B.H.P., 2 3-in., 2 m.

Motor Boats.—Azerbaijan, Gehlani, and Mazenderan (Palermo,

1935), 68½ ft., 28 tons, 14 knots, 1 1.5-in.

Tuc.—Niru (1935), 14 knots.

### PERU.

- LIGHT CRUISERS.—Almirante Grau and Coronel Bolognesi (Vickers, 1907), 8,200 tons, 24 knots, 2 6-in., 8 3-in., 8 m., 2 18-in. torpedo tubes.
- Destroyers.—Almirante Guise (ex-Russian, 1917), 1,400 tons, 85 knots, 5 4-in., 1 2-pdr. A.A., 1 M., 3 18-in. torpedo tubes; 80 mines; Almirante Villar (ex-Russian, 1918), 1,185 tons, 85 knots, 4 4-in., 1 2-pdr., 2 M., 3 18-in. torpedo tubes, 80 mines.

Submarines.—**R.1-4** ( $\hat{U}$ .S.A., 1926–28), 576/682 tons, 14.5/10 knots,

1 3-in. 4 21-in. torpedo tubes.

Gunboats.—Amazonas and Loreto (Electric S.B. Co., 1984), 250 tons, 15 knots, 4 3-in. H.A., 2 ·8-in., 2 m.; America (1904), 350 tons, 14 knots, 2 3-pdr.; Coronel Portillo (ex-San Pablo, 1902), 49 tons, 7 knots, 2 3-pdr.; Iquitos (1875), rebuilt, 1896, 50 tons, 7·5 knots, 4 1·46-in., 2 ·8-in., 2 m.; Napo (Yarrow, 1921), 98 tons, 12 knots, 3 1·8-in.

TRANSPORT.—Rimac (ex-Eten, 1907), 6,848 tons gross, 12 knots,

cargo capacity, 7,000 tons.

OILER.—Parinas (Thornycroft, 1921), 2,820 tons, 10 knots, carries 4,800 tons of oil.

Submarine Chasers.—8 in number (ex-U.S.A.).

### PHILIPPINES.

MOTOR TORPEDO BOATS.—4 in number (Thornycroft, 1989), 40 knots, 4 Lewis guns, 2 torpedo troughs.

### POLAND.

Destroyers.—Blyskawica (J. S. White, 1937), 2,144 tons, 89 knots, 8 4-in., 4 1.57-in., 2 triple 21-in. torpedo tubes; Burza (Chantiers Navals, 1932), 1,540 tons, 33 knots, 2 5.1-in., 1 2.9-in. H.A., 6 21.7-in. torpedo tubes; Piorun (ex-H.M.S. Nerissa, 1940); Krakowiak (ex-H.M.S. Silverston); Slazak (ex-H.M.S. Bedale, Hunt class), 6 4-in., 1 m.pp.; Garland (ex-British), 1,335 tons, 3 4.7-in., 36 knots, 4 21-in. torpedo tubes.



Submarines.—Sep (Rotterdam, 1989), 1,090/1,450 tons, 14.5/11 knots, 14.1-in., 21.57-in. A.A., 1221.7-in. torpedo tubes; Zbik, Rys, and Wilk (built in France, 1981-82), 965/1,280 tons, 14/9 knots, 13.9-in., 12-pdr. A.A., 621.7-in. torpedo tubes, 40 mines; Sokol (1941), Dzik (1942), ex-British Ursula Class.

MINELAYER.—Gryf (Havre, 1938), 2,100 tons, 20 knots, 6 4-7-in., 4

1.57-in. A.A., 300 mines.

MINESWEEPERS.—Oxhoft (ex-Zuraw) (Gydnia, 1939); Westerplatte (ex-Czajka) (Modlin, 1936), 140 tons, 15 knots, 1 3-in., 4 m.

TRAINING SHIP.—Iskra (ex-British, 1917), Three Masted Schooner, 500 tons.

MOTOR GUNBOATS.—ex-British, number unknown.

Note.—Sep, Zbik, and Rys are interned in Sweden.

### PORTUGAL.

- Destroyers.—Douro, Tejo, Dao (Yarrow, Lisbon, 1935–96), Lima and Vouga (Yarrow, Glasgow, 1933), 1,220 tons, 33,000 S.H.P., 36 knots, 4 4.7-in., 3 1.5-in. A.A. pom poms, 2 quadruple 21-in. torpedo tubes, 20 mines, complement 164. Three Destroyers building.
- MOTOR TORPEDO BOATS.—6 in number.
- Submarines.—Golfinho, Espadarte, Delfim (Vickers, 1934-35), 900/1,100 tons, 2,800/1,000 B.H.P., 16·5/9·2 knots, 1 4-in., 2 m., 6 21-in. torpedo tubes. Three submarines building.
- Gunboats.—Faro and Lagos (Lisbon, 1928, 1932), 300 tons, 13 knots, 2 1.85-in.; Ibo (1912), Mandovi (1918), Zaire (1297), Diu (1932), built at Naval Arsenal, Lisbon, 400 tons, 13 knots, 2 3-in., 2 3-pdr., 2 m. 6 in number building.
- RIVER GUNBOATS.—Macau (Yarrow, 1909), 95 tons, 12 knots, 2 6-pdr., 3 m.; Rio Minho (Lisbon, 1904), 37 tons, 7.5 knots, 1 1-pdr., 2 m.; Tete (Yarrow, 1904), 70 tons, 7.5 knots, 2 3-pdr., 3 1-pdr.
- SLOOPS.—Bartolomeu Dias and Afonso de Albuquerque (Hawthorn Leslie, 1935), 1,780 tons, 21 knots, 4 4.7-in., 2 3-in. H.A., 4 pom poms, 2 depth charge throwers, 40 mines; Joao de Lisboa (ex-Infante don Henrique, 1937) and Pedro Nunes (1935), built at Lisbon, 1,080 tons, 17 knots, 2 4.7-in., 4 1.57-in. A.A., 2 depth charge throwers; Goncalves Zarco and Goncalo Velho (Hawthorn Leslie, 1933), 950 tons, 16.5 knots, 3 4.7-in., 2 1.85-in., 2 2-pdr. pom poms.
- TRAINING SHIP.—Sagres (Bremerhaven, 1896), 3,100 tons, 7 knots.
- Auxiliaries.—Lince (Leghorn, 1911), 77 tons, 12 knots; Vulcano (Thornycroft, 1910), 500 tons, 12 knots; Lidador (Birkenhead, 1884), 200 tons, 9 knots, 2 3-pr.; Acor (1906), 227 tons (gross); Almancil (1930), 350 tons (gross); Alberia (1910), 320 tons (gross); Algol (1930), 340 tons (gross); Altair (1920), 341 tons (gross); Azevia (1941); Bicuda; Corvina; Dourada; Espadilha; Fataca,



- Surveying Ships.—D. Joao de Castro (Alfeite, 1941), 960 tons, 14 knots, 1 3-in., 1 aircraft; Berrio (La Loire, 1898), 350 tons, 10 knots; Carvalho Araujo (ex-H.M.S. Jonquil, 1915), 900 tons, 17 knots.
- LIGHTHOUSE TENDER.—Almirante Schultz (Penhoey, 1929), 520 tons, 11.5 knots.
- Tanker.—Sambraz (1942), 7,000 tons (capacity 8,500 tons), 12 knots, 1 3.9-in. a.a.

### ROUMANIA.*

- DESTROYERS.—Regele Ferdinand and Regina Maria (Naples, 1980), 1,785 tons, length  $348\frac{3}{4}$  ft., 42,000 S.H.P., 38 knots, 5 4·7-in., 1 8-in. H.A., 2 triple 21-in. torpedo tubes, 50 mines; Marasti (ex-Italian Sparviero, 1917), 1,460 tons, 40,000 S.H.P., 85 knots, 5 4·7-in. 4 3-in. H.A., 2 M., 2 double 18-in. torpedo tubes, 50 mines.
- MOTOR TORPEDO BOAT.—Viscolul (ex-British, 1939), 70 ft. length, 30 tons, 41 knots, 8 m., 2 21-in. torpedo tubes.
- TORPEDO BOATS.—Naluca, Shorul, and Zmeul (ex-Austrian, 1913-14), 260 tons, 28 knots, 2 2.6-in., 2 torpedo tubes in Shorul.
- Submarines.—Delfinul (Fiume, 1936), 700/950 tons, 1,600/1,300 S.H.P., 14/9.5 knots, 1 4.2-in., 6 21-in. torpedo tubes; S.1, S.2 (Galatz, 1941), 620/800 tons, 585/700 B.H.P., 4 21-in. torpedo tubes, 1 4-in., 16/8 knots.
- Submarine Depot Ship.—Constanta (Fiume, 1980), 1,821 tons, 18 knots, 2 4-in.
- RIVER MONITORS.—Lascar Catargiu, Ioan Bratianu, Mihail Kogalniceaunu, Alexandru Lahovari (Trieste, 1907–08), 680 tons, 13 knots, 3 4·7-in., 1 3-in. A.A., 2 1·85-in., 4 M.; Bucovina (exAustrian Sava, Budapest, 1916), 550 tons, 12 knots, 2 4·7-in., 2 4·7-in. howitzers, 2 2·6-in. A.A., 2 1·85-in. 6 M.; Basarabia (exAustrian Inn, Budapest, 1915), 590 tons, 12 knots, 2 4·7-in., 2 4·7-in. howitzers, 2 1·85-in., 9 M.; Ardeal (ex-Austrian Temes, Budapest, 1904), 450 tons, 10 knots, 2 4·7-in., 1 3·5-in. A.A., 2 1·85-in., 2 M.
- GUNBOATS.—Stihi (ex-French Friponne, Lorient, 1917), Dumitrescu (ex-French Mignonne, Brest, 1917), Ghiculescu (ex-French Impatiente, Brest, 1916), 350 tons, 15 knots, 2 3.9-in., 2 m.
- Patrol Boats.—Nos. 3 & 7 (Thornycroft, 1908), 100 ft., 50 tons, 18 knots, 1 3-pdr., 1 m.
- RIVER GUNBOATS.—Bistritsa, Oltul, and Siretul (Blackwall, 1888), 100 tons, 12 knots, 1 6-pdr., 1 1-pdr.
- MINELAYERS.—Admiral Murgescu (Galatz, 1940), and Cetetea Alba (Hamburg, 1940), 812 tons, 16 knots, 24-in., 21-46-in., 135 mines.
- YACHTS.—Luceafarul (Glasgow, 1931), 1,580 tons, 17 knots; Taifun (Royal Yacht) (J. S. White, 1938), 34 tons; Macin, Stefan Cel Mare.
- TRAINING SHIP.—Mircea (Hamburg, 1939), 1,750 tons, 10 knots. Motor Boats.—10 in number (some armoured), 40 tons, 14 knots. Armed Motor Launches.—7 in number, 30-50 tons.
  - * Under the control of Germany.

### THAILAND.

- DESTROYER.—Phra Ruang (ex-British Radiant, Thornycroft, 1917), 718 tons, 29,000 S.H.P., 35 knots, 3 4-in., 1 2-pdr. pom pom., 1 m., 2 double 21-in. torpedo tubes.
- TORPEDO BOATS.—Jumbara, Pattani, Surasdra, Chandaraburi, and Rayong (Monfalcone, 1937), 470 tons, 10,000 S.H.P., 31 knots, 3 8-in. A.A., 4 ·8-in. M., 6 18-in. torpedo tubes; Puket and Trad (Tireste, 1936), 880 tons, 9,000 S.H.P., 31 knots, 3 8-in. A.A., 4 ·8-in. M., 6 18-in. torpedo tubes.
- MOTOR TORPEDO BOATS.—6 in number (Thornycroft, 1930-35), 55 ft., 13.5 tons, 2 torpedoes. A number building.
- Submarines.—Blai Jumbol, Sinsamudr, Machanu Virun (Mitsubishi, 1938), 325 tons, 14.5/8 knots, 1 m., 5 21-in. torpedo tubes, complement 24. Four others projected.
- Gunboats.—Dhamburi and Sri Ayudhya (Kobe, 1938), 2,000 tons, 15.5 knots, 4 8-in., 4 3-in.; Sukhodaya (Vickers, 1930), 890 tons, 13 knots, 2 6-in., 4 3-in. A.A., 2½-in. armour belt; Mongkut Rajakumarn (ex-Filipinas, Hong Kong and Whampoa Dock Co., 1887), 700 tons, 11 knots, 2 4.7-in., 2 6-pdr., 3 3-pdr.; Sugbrib (1901), 410 tons, 11.5 knots, 1 4.7-in., 5 6-pdr., 2 m.; Suriya Monthon (Thornycroft, 1908), 190 tons, 14.5 knots, 1 6-pdr., 4 m.; Ratnakosindr (Armstrong, 1925), 890 tons, 12 knots, 2 6-in., 4 8-in. H.A., 2½-in. armour belt.
- MINELAYERS.—Bang Rachan (S1) and Nong Sarai (S2) (Monfalcone, 1936), 368 tons, 12 knots, 2 3-in., 140 mines. A third vessel is building at Ancona.
- Patrol Boats.—Klongyai, Takbai, and Kantang (Yokohama, 1937), 110 tons, 18 knots, 1 3-in., 3 ·8-in. M., 2 18-in. torpedo tubes. Twelve in number building, 100 tons.
- TRAINING SHIPS.—Tachin and Macklong (Uraga, 1937), 1,400 tons, 17 knots, 4 4.7-in., 2.5-in. M. A.A., 2 double 12-in. torpedo tubes, 20 mines; Chao Phra (ex-British Havant, 1918), 700 tons, 16 knots.
- Survey Ships.—Cuong, Han Thale, Lieu Thale, and Chen Thale, 400 tons, 8 knots.
- FISHERY PROTECTION VESSELS.—Sara Sindhu, Thiew Uthok, Travane Vari (Bangkok, 1936), 50 tons, 9.5 knots, 1 1.5-in. Three others building.
- Tug.—Samet (ex-Pi-Sua-Nam), 90 tons, 9.5 knots.
- TRANSPORTS.—Angthong (ex-Maha Chakkri, Kawasaki, 1918), 2,700 tons, 15 knots, 4 8-in.; Chang (ex-Vides Kichkar, Maryport, 1902), 750 tons, 9.5 knots; Pagan and Sichaun (Harima, 1938), 650 tons.
- OIL TANKER.—Samui (Hakodate, 1936), 1,800 tons, 12 knots. One other projected.

### TURKEY.

- Battle Cruiser.—Yavouz Sultan Selim (ex-Goeben, Hamburg, 1912), 22,734 tons, 52,000 S.H.P., 27 knots, 10 11-in., 10 5-9-in., 8 3-5-in., A.A., 14 1-5-in. m.p.p., 4 M., 4 19-7-in. torpedo tubes, complement 1,000.
- CRUISERS.—Hamidieh (Armstrong, 1904), 3,790 tons, 12,000 H.P., 22 knots, 2 5.9-in., 6 3-in., 8 3-in. H.A., 2 18-in., torpedo tubes, 70 mines; Medjidieh (ex-Russian Prutt, Cramp, 1904), 3,800 tons, 12,000 H.P., 22 knots, 4 5.1-in., 2 3-in. H.A., 4 M. Two in number projected, 8,000 tons.
- Destroyers.—Kocatepe and Adatepe (Ansaldo, 1932), 1,800 tons, 38,000 S.H.P., 38 knots, 4 4·7-in., 3 2-pdr. H.A., 3 M., 6 21-in. torpedo tubes, 40 mines; Tinaztepe and Zafer (Riva Trigoso, 1932), 1,840 tons, 50,000 S.H.P., 38 knots, 4 4·7-in., 3 2-pdr. A.A., 2 triple 21-in. torpedo tubes; Sultan Hisar and Demir Hisar (Denny Bros., 1941), Muavenet and Gayret (Vickers, 1941), 1,370 tons, 34,000 S.H.P., 35 knots, 4 4·7-in., 6 1·5-in. A.A., 2 quadruple 21-in. torpedo tubes.
- TORPEDO BOATS.—Berk (ex-Berkisatvet) and Peyk (ex-Peikishevket, Kiel, 1907), 830 tons, 20 knots, 2 4-in., 4 6-pdr., 2 1-pdr., 2 M., 3 18-in. torpedo tubes, 30 mines.
- MOTOR TORPEDO BOATS.—A number building.
- Patrol Motor Boats.—Doghan, Marti, and Deniz Kouchou (Venice, 1982), 31 tons, 34 knots, 1 3-in., 1 1-in. pom pom., 2 18-in. torpedo tubes, 6 depth charges. A number building.
- Submarines.—Burak Reis, Murat Reis, Uluc Ali Reis, Oruc Reis (Vickers, 1941), 624/856 tons, 1,200/708 H.P., 13·7/8·4 knots, 1 4-in., 3 m., 5 21-in. torpedo tubes; Atilay, Yildiray (Istanbul, 1941), Saldiray (Kiel, 1939), 820/1,100 tons, 4,800 H.P., 20/9 knots, 1 4-in., 6 21-in. torpedo tubes, 40 mines; Dumlupinar (Monfalcone, 1982), 935/1,220 tons, 2,400/1,400 H.P., 15/9·5 knots, 1 4-in. H.A., 3 m., 4 21-in. torpedo tubes, 40 mines; Gur (Cadiz, 1931), 750/960 tons, 2,800/1,000 H.P., 20/9 knots, 1 4-in., 1 ·8-in. m., 6 21-in. torpedo tubes; Inönü I and Inönü II (Rotterdam, 1928), 433/556 tons, 1,100 H.P., 13·5/8·5 knots, 1 3-in. H.A., 1 m., 6 17·7-in. torpedo tubes; Sakarya (Monfalcone, 1932), 610/940 tons, 1,500/1,100 H.P., 14·5/9·3 knots, 1 4-in., 1 ·8-in m., 6 21-in.
- Submarine Depot Ships.—Erkin (ex-S.S. Trier, Bremen, 1928), 16,000 tons, 12.5 knots, 2 m.; Akin (ex-Rasit, Smith's Dom Co., 1913), 33 tons, 12 knots; Marmora (ex-R.S. Syria, 1906), 1,500 tons.
- MINESWEEPERS.—Hizir Reis, Issa Reis, and Kemal Reis (La Seyne, 1912), 443 tons, 14 knots, 3 3-in., 2 3-pdr., 2 m.; 2 Motor Minesweepers (ex-British); 16 converted ferry boats and coastal craft.
- MINELAYERS.—Sivri Hisar and Yuzbashi Hakki (Thornycroft, 1940), 350 tons, 15 knots, 1 3-in., 80 mines; Atak and Dalgitch (Ismidt, 1940, 1941), 500 tons, 13 knots, 40 mines; Nusret (ex-Yardim, Kiel, 1913), 360 tons, 15 knots, 2 m., 25 mines; Uyanik (ex-Intibah, Port Glasgow, 1886), 600 tons, 12 knots, 50 mines. Several others.

OIL TANKERS.—Gölcük (Ismidt, 1987), 1,400 tons, 10 knots, 750 tons capacity; Beykoz, 435 tons (gross); Istanbul, 7,400 tons (D.W.), 15 knots.

YACHTS.—Gunes Dil (ex-Savarona, Hamburg, 1931), 5,700 tons, 21 knots, 2 3-pdr.; Ertougrul (Armstrong, 1903), 900 tons, 21 knots, 8 3-pdr.; Acar.

Gunboat.—Aidin Reis (St. Nazaire, 1918), 502 tons, 14 knots, 2 4-in., 2 6-pdr., 4 m.

DEPOT SHIP .- Torghud Reis.

### URUGUAY.

TORPEDO GUNBOAT.—Uruguay (Stettin, 1910), 1,150 tons, 23 knots, 2 4.7-in., 4 3-in., 6 1-pdr., 4 m., 2 18-in. torpedo tubes.

PATROL BOATS.—Paysandu, Salto, and Rio Negro (Ancona, 1985), 150 tons, 16 knots, 2 3-in., 2 m.

Surveying Ships.—18 De Julio (Leith, 1879), 680 tons, 12 knots, 2 m.; Capitan Miranda (Cadiz, 1930), 516 tons, 12 knots.

Tugs.—Zapican (ex-Atlantico, 1911), 162 tons, 10 knots; Vanguardia (Glasgow, 1908), 95 tons, 12 knots, 2 1.5-in.; Corsario (1888), 130 tons, 10 knots, 3 1.5-in.; Huracán (ex-Fortuna, 1879), 197 tons, 12 knots.

Training Ship.—Aspirante (ex-Exir Dallen, 1919), 250 tons, auxiliary motor.

### VENEZUELA.

MINELAYERS.—General Soublette (ex-Italian Dardanelli) and General Urdaneta (ex-Italian Milazzo) (Monfalcone, 1926), 615 tons, 15 knots, 2 4-in., 1 3-in. H.A., 80 mines.

Gunboats.—Mariscal Sucre (ex-Isla de Cuba, 1886), 1,125 tons, 10 knots, 2 6-in., 2 6-pdr., 6 8-pdr., 2 1-pdr., 1 m.; General Salom (ex-U.S. Atlanta, 1884), 750 tons, 12 knots, 1 3-in., 4 6-pdr., 2 m.; Miranda (Clydebank, 1895), 200 tons, 10 knots, 5 6-pdr.; Brion, 150 tons.

Tugs.—Aragua (ex-Caroni), 154 tons, 7 knots, 1 m.; José Felix Ribas (ex-Zumbador, 1894), 300 tons, 10 knots, 2 6-pdr., 1 m.

RIVER GUNBOATS.—2 in number.

YACHTS.—Maracay (1902), 800 tons, 8 knots, 2 3-in., 2 A.A., 1 M.; Leandro (ex-Dr. Brinkley, U.S.A., 1925), 320 tons, 18 knots, 2 1.46-in.

### YUGOSLAVIA.

Destroyers.—Premuda (ex-Dubrovnik) (Yarrow, 1932), 1,880 tons, 42,000 S.H.P., 37 knots, 45.5-in., 23.4-in., 61.5-in. A.A., 42-pdr., 2 triple 21-in. torpedo tubes, 2 depth charge throwers, 40 mines; Beograd (Nantes, 1939), Sebenico (ex-Ljubljana) (Split, 1939), 1,190 tons, 40,000 S.H.P., 38 knots, 44.7-in., 41.57-in. A.A., 2 triple 21-in. torpedo tubes, 30 mines; 1 in number (building at Split), 1,875 tons, 38 knots, 5.5-in., 101.57-in. A.A., 2 M., 621-in. torpedo tubes. Two others building.

CORVETTE.—Nada (ex-H.M.S. Mallow), 925 tons, 16 knots, 1 4-in. TORPEDO BOATS.—T. 1-8 (ex-Austrian, 1913-15), 200 tons, 5,000 S.H.P., 28 knots, 2 2.5-in. A.A., 2 M., 2 21-in. torpedo tubes. MOTOR TORPEDO BOATS.—Durmitor, Dinara, Kajmakcalan, Orsen, Rudnik, Suvobor, Triglav, and Velebit (Bremen, 1986–37), 92 ft., 62 tons, 34 knots, 1 1.57-in. A.A., 2 21-in. torpedo tubes; Cetnik and Uskok (Thornycroft, 1927), 59 ft., 13 tons, 40 knots, 1 m., 2 18-in. torpedo tubes.

Submarines.—Hrabri and Nebojsca (Armonstrong, 1928), 870/1,146 tons, 2,400/1,600 B.H.P., 15/10 knots, 2 4-in., 6 21-in. torpedo tubes; Smeli and Osvetnik (Nantes, 1929), 570/797 tons, 1,480/1,120 S.H.P., 14·5/9·2 knots, 1 4-in., 1 2-pdr. A.A., 1 m., 6 21-in.

torpedo tubes.

RIVER MONITORS.—Varda (ex-Austrian Bosnia, Budapest, 1916), 580 tons, 18 knots, 2 4·7-in., 2 4·7-in. howitzers, 8 2·6-in A.A., 2 1·85-in., 8 m.; Drava (ex-Austrian Enns, Budapest, 1915), 450 tons, 18 knots, 2 4·7-in., 2 4·7-in. howitzers, 2 2·6-in. A.A., 7 m.; Sava (ex-Austrian Bodrog, Budapest, 1904), 380 tons, 18 knots, 2 4·7-in., 1 4·7-in. howitzer, 1 2·6-in. A.A., 1 2·6-in. howitzer, 5 m.; Morava (ex-Austrian Koros, Budapest, 1892), 390 tons, 9 knots, 2 4·7-in., 2 9-pdr., 3 m.

MINELAYERS.—Galeb, Jastreb, Kobac, Labud, Orao, Sokol (ex-German M class, 1918–19), 330 tons, 15 knots, 2 3-9-in. H.A., 2 M., 40

mines.

MINESWEEPERS.—Malinska, Marjan, Meljine, Mljet, and Mosor (Yarrow, Kraljevica, 1931–32), 180 tons, 9 knots, 1 2.5-in. A.A. D2 (ex-Austrian, 1889), 78 tons, 17 knots, 2 1.45-in., 1 m.

SEAPLANE TENDER AND DEPOT SHIP.—Zmaj (Hamburg, 1929), 1,870

tons, 15 knots, 1 4-in. A.A., 10 seaplanes.

SUBMARINE DEPOT SHIP.—Hvar (ex-Vintali, Sunderland, 1896), 2,000 tons, 13 knots; Sitnica (ex-Najade, 1891), 370 tons, 9 knots, 2 3-pdr.

SALVAGE VESSEL.—Spasilac (Kiel, 1930), 740 tons, 15 knots.

TRAINING SHIP.—Three masted schooner Jadran (Hamburg, 1933), 710 tons, auxiliary motor, 8 knots, 2 2-pdr.

YACHTS.—Vila (ex-Dalmata, 1896), 230 tons, 12 knots; Dragor (1928),

250 tons, 10 knots.

Tugs.—Jaki (1915), 360 tons, 15 knots, 2 1·85-in.; Mocni (Antwerp, 1939), 260 tons, 11 knots, 2 1·85-in.; Silni (1914), 200 tons, 10 knots, 2 1·85-in.; Marljivi (1898), 130 tons, 10 knots; Snagni, 100 tons, 10 knots; Ustrajni (1917), 160 tons, 9 knots; Cer (1909), 250 tons, 15 knots, 2 m.; Sisak (ex-Triglav, 1915), 90 tons, 11 knots, 2 m.; Sabak (ex-Avala), 90 tons, 8 knots, 2 m.

PATROL BOATS.—Granicar and Strazar (1929), 36 tons, 9 knots, 1 8-pdr.

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# BRITISH AND FOREIGN FLOTILLAS.

# Great Britain.

,			D	imension	ns	crew	d		Mean		pes	ent
Name or Number	Built by	Com- pleted	Length (extreme)	Beam	Draught	Number of screws	Standard displacement	Horse- power	speed on trial, or ex- pected	Armament	Torpedo tubes	Complement
DESTROYERS— Cæsar Class: Cæsar Caprice Carysfoot Chequers Cheviot Cockade		1944- 45	Feet	Feet	Feet	2	Tons		Knots		21"	
Wager Class: Kempenfelt (Ldr.) Wager Wakeful Whelp Wizard		1944				2					21"	
Valentine Class: Venus Vigilant Virago *Algonquin (ex-Valentine *Sidux (ex-Vixen)		1944				2					21"	
Ulster Class: Grenville (Ldr.) Ulster Ulysses Undaunted Undine Urania Urchin Ursa		1943- 44				2					21"	
Troubridge Class: Troubridge (Ldr.) Teazer Tenacious Termigant Terpischore Tumult Tuscan Tyrian		1943				2					21"	
Saumarez Class: Saumarez (Ldr.) Savage Scourge Scorpion Serapis †Stord Swift	Hawthorn Leslie	1943				2				4 4·7-in.	21*	
Rotherham Class: Rotherham (Ldr.) Racehorse Raider Rapid Redoubt Relentless Rocket Roebuck	J. Brown	1942- 43				2				4 4·7-in.	214	

^{*} Royal Canadian Navy.

[†] On loan to Royal Norwegian Navy.

			21100	<u> </u>								
			D	imensio	ns	Crews	1 ient		Mean		<b>88</b>	ent
Name or number	Built by	Com- pleted	Length (extreme)	Beam	Draught	Number of screws	Standard displacement	Horse- power	speed on trial, or ex- pected	Armament	Torpedo tubes	Complement (war).
DESTROYERS—contd. Quilliam Class: Quilliam (Ldr.) Queenborough Quadrant Quality  *Quickmatch  *Quickmatch		1942	Feet	Feet	Feet	2	Tons	••	Knots	4 4·7-in.	21°	
Pakenkem Class: Paladin Pathfinder Penn Petard	Hawthorn Leslie	1941- 42		••		2	••			4 4-in.	21"	
Onelow Class: Onalow (Ldr.) Obdurate Obedient Offa Onslaught Opportune Orbi Orwell	J. Brown Denny Denny Fairfield Fairfield Thornycroft Fairfield Thornycroft	1941- 42				2	••	•••	••	4 4-in, or 4-7-in.	21*	
Napier Class:  "Napier (I.dr.) "Nepal "Nisam "Norman †Piorun (ez-Neriasa)	Fairfield Thornycroft J. Brown Thornycroft J. Brown	1940 1942 1941 1941 1940				2				6 4·7-in.	21"	
Milne Class: Milne (Ldr.) Marne Matchless Moteor Musketeer	Scotts Vickers Stephen Fairfield	1942 1941 1942 1942 1942				2	1935 1920 1920 1920 1920	48,000	86-0	6 4·7·in., 1 4·in. A.A.	8 21°	
Laforey Class : Lookout Loyal	Scotts	1942				2	1920	48,000	36.0	6 4·7-in.	8 21"	
Kelly Class : Kelvin Kimberley	Fairfield Thornycroft	1939			••	2	1760	40,000	36.0	6 4·7-in.	10 21°	
Javelin Class : Javelin Jervis	J. Brown Hawthorn Leslie	1939				2	1760	40,000	36.0	6 4·7-in.	10 21"	
<i>Tribal Class:</i> Ashanti Eskimo Nublan Tartar	Denny Vickers Thornycroft Swan Hunter	1938 1938 1938 1939		361		2	1870	44,000	36-5	6 4·7-in., 2 4-in.	21"	20
Arunta Warrmunga Haida Huron Iroquois	Cockatoo Vickers	1942 1942 1943 1943 1942		361		2	1870	44,000	361	6 4·7-in., 2 4-in.	21"	20
Intrepid Class: Icarus Icarus Ilex Impulsive Ithuriel (ex-Gayret) Inconstant (ex- Maujenet)	J. Brown J. S. White Vickers	1937 1938 1942	323	33	81	2	1 <b>3</b> 70	34,000	36	4 4·7-in., 6 smaller	10 21	14
Havant Class: Havelock Hesperus Highlander	J. S. White Thornycroft	1940	323	33	81	2	1400	34,000	35	2 4·7-in., 4 smaller	8 21°	14

[•] On loan to Royal Australian Navy. § Royal Canadian Navy

[†] On loan to Polish Navy. ‡ Royal Australian Navy. ∦ On loan from Turkish Navy.

			D	imensio	ns	crew	ent		Mean		pes	ent
Name or Number	Built by	Com- pleted	Length (extreme)	Beam	Draught	Number of screws	Standard displacement	Horse- power	speed on trial, or ex- pected	Armament	Torpedo tubes	Complement (war)
DESTROYERS—contd. Herd Class:			Feet	Feet	Feet		Tons		Knots		( )	
Hotspur †Chaudiere (ex-Hero)	Scotts Vickers	1936	323	33	81	2	1340	34,000	36	3 4.7 in., 6 smaller	8 21"	145
Greyhound Class: Garland Ottawa (ex-Griffin)	Fairfield Vickers	1936	323	33	81	2	1335	34,000	36	3 4·7-in., 6 smaller	8 21"	145
Fearless Class: Faulknor (Ldr.)	Yarrow	1935	343	334	9	2	1460	38,000	363	3 4·7-in., 1 3-in.a.a.	8 21"	150
Fame Forester †Qu'Appelle (ex- Foxhound) †Saskatchewan (ex- Fortune)	Vickers J. S. White	1935	329	331	81	2	1350	36,000	36	3 4·7-in., 6 smaller	8 21"	145
Eclipse Class: Escapade Navarinow (ex-Enid) Gatineau (ex-Express)	Scotts Denny Swan Hunter	1936	329	331	81	2	1375	36,000	36	3 4·7-in., 6 smaller	4 21"	145
Defender Class: Duncan (Ldr.) †Kootenay (ex-Decoy)	Portsmouth Thornycroft	1933	329	33	81	2	1400	36,000	354	3 4·7-in., 6 smaller	4 21"	175
Crusader Class:  †Assiniboine (ex- Kempenfelt)  †Restigoucit's (ex- Comet)  †St. Laurent (ex-	J. S. White Portsmouth Vickers	1932	329	33	81	2	1375	36,000	36	3 4·7 in., 6 smaller	4 21"	175
Cygnet)	Vickers											
Beagle Class:  Beagle Brilliant Bulldog \$\\$Salamis (ex-Boreas)	J. Brown Swan Hunter Palmers	1931	323	321	81	2	1360	34,000	351	3 4·7-in., 6 smaller	4 21"	140
Acasta Class: Active Antelope Anthony Arrow	Hawthorn Leslie Hawthorn Leslie Scotts Vickers	1930	323	321	81	2	1350	34,000	351	2 4·7-in., 6 smaller	8 21"	140
Admiralty Design: Campbell (Ldr.) Douglas (Ldr.) Mackay (Ldr.) Malcolm (Ldr.) Montrose (Ldr.) §Stuart (Ldr.)	Cammell Laird Cammell Laird Cammell Laird Cammell Laird Hawthorn Leslie Hawthorn Leslie	1918 1918 1919 1919 1918 1918	332½	313	121	2	1530	40,000	36½	2 4·7-in., 1 3-in. A.A. 6 smaller	6 21"	182
Thornycroft: Keppel	Thornycroft	1925	329	32	121	2	1480	40,000	36	2 4·7-in.,	6	182
Wishart	Thornycroft	1920	3121	302	10	2	1140	30,000	35	5 smaller 3 4·7-in.,	21"	130
Viscount	Thornycroft	1918	3121	304	10	2	1140	30,000	35	1 12-pr. 2 4-in., 5	21"	
Wallace	Thornycroft	1919	3291	32	121	2	1480	40,000	36	smaller 4 4-in., 4		183
Viceroy	Thornycroft	1918	312	302	10	2	1120	30,000	35	2-pr. 4 4-in.,		120
†Skeena	Thornycroft	1931	320	321	10	2	1340	32,000	35	2 2-pr. 3 4·7-in.,	4	140
Admiralty "S" Class: Saladin Sabre Sardonyx Scimitar	Stephen Stephen Stephen Brown	1919 1918 1919 1918	276	263	108	2	905	27,000	36	13-in. A.A. 34-in., 12-pr., 1 M., 4 L.	21" 2 D. 21"	103
Scout Shikari	Brown Doxford	1918 1924								1	or party	

^{*} On loan to Polish Navy.

[†] Royal Canadian Navy. § Royal Australian Navy.

Con loan to Royal Hellenic Navy.

'	ureat	DITU	<b>MI</b> I(	onun	uea.	•					
		D	imensio	ns	rews	, t		Mean		3	H
Built by	Com- pleted	Length (extreme)	Beam	Draught	Number of se	Standar displaceme	Horse- power	speed on trial, or ex- pected		Torpedo tu	Complement (war)
		Feet	Feet	Feet		Tons		Knots			
J. Brown	1917	276	261	8	2	900	27,000	36	1 4-in., 6 smaller	4 21"	103
Beardmore Brown Brown Denny	1919 1919 1919 1919	312	291	10\$	2	1120	27,000	34	3 4·7-in., 1 4-in., 2 2-pr., 1 M., 4 L.	1 T.	180
Fairfield Swan Hunter J. S. White J. S. White J. S. White	1919 1919 1919 1919 1920	312	29}	10‡	2	1120	27,000	34	,		
Swan Hunter Chatham Palmer Scott Swan Hunter	1925 1925 1918 1918 1918	812	291	10	2	1100	27,000	34	2 4-in., 2 6-pr.		
J. S. White Fairfield Scott Denny Denny Brown	1918 1918 1918 1918	312	291	10-7	2	1100	27,000	34	1 2-pr., 1 M., 4 L. 4 4-in., 1 2-pr.,	2 T. 2 T. 21"	120 120
J. S. White Beardmore Beardmore Stephen Beardmore	1918 1918 1918 1918 1918								1 2-pr., 4 4-in.,	1 <b>T</b> .	
Brown	1917								4 4-in.,	8	
Brown Brown Hawthorn Leslie Hawthorn Leslie Stephen Yarrow	1917 1918 1917 1917 1918 1918	312	291	104	2	1090	27,000	34	1 M., 4 L. 4 4-in., 1 2-pr., 1 M., 4 L. 4 4-in., 1 2-pr.	21. 11., 10. 21. 21.	
Thornycroft	1927	328	31 <u>1</u>	9	2	1850	<b>39,</b> 500	87	1 M., 4 L. 4 4.7-in., 2 2-pr., 1 M., 4 L.	1 D. 2 T. 21"	140
Yarrow	1927	822	<b>3</b> 1	81	2	1170	33,000	87		5 21"	
Swan Hunter Cammell Laird John Brown Cammell Laird John Brown Cammell Laird Cammell Laird Cammell Laird Hawthorn Lesite Stephen John Brown Vickers-Armstrong* Cammell Laird Thornycroft Thornycroft Cammell Laird Swan Hunter Vickers-Armstrong Varrow	1942 1940 1942 1941 1941 1942 1942 1942 1941 1942 1940 1942 1941 1943 1941 1943	270		••	2	900	19,000	273	4 4-in. H.A.	21*	••
	Built by  J. Brown  Beardmore Brown Brown Denny Fairfield Swan Hunter J. S. White J. S. Wh	Built by   Completed	Built by   Completed   Feet   Feet	Built by   Completed   Feet   Feet	Built by   Completed   Feet   Feet	Built by   Completed   Feet   Feet	Built by   Completed   Feet   Feet   Feet   Tons	Built by   Completed   Feet   Feet   Feet   Tons   Feet   Feet	Built by   Completed   Feet   Feet	Built by   Completed   Early   Early	Built by   Completed   Feet   Feet

			D	imensio	ns	crews	nt		Mean		pes	nt
Name or Number	Built by	Com- pleted	Length (extreme)	Beam	Draught	Number of screws	Standard	Horse- power	speed on trial, or ex- pected	Armament	Torpedo tubes	Complement
DESTROYERS—contd.			Feet	Feet	Feet		Tons		Knots			
Hunt Class—contd. Cotswold	Yarrow	1940	270			2	900	19,000	271	4 4-in.	21"	
Cottesmore	Yarrow	1940	210			-	800	18,000	212	H.A.		
Cowdray	Scotts	1942										
Crete (ex-Hursley)	Swan Hunter	1942										
Croome	Stephen	1941										
Derwent	Vickers-Armstrong	1942							1			
Easton	White Vickers-Armstrong	1942										
Eglinton Eggesford	White	1940 1943									,	
Eridge	Swan Hunter	1941			1							
Exmoor (ex-Bur-	D Wall II allow	1011										
ton)	Swan Hunter	1941										
Farndale	Swan Hunter	1941										
Fernie	John Brown John Brown	1940 1940										
Garth Glaisdale	Cammell Laird	1940								1		
Goathland	Fairfield	1012										
Hambledon	Swan Hunter	1940										
Haydon Holderness	Vickers-Armstrong	1942										
Holderness	Swan Hunter	1940										
Kanares (ex- Hatherleigh)	Vickers-Armstrong	1942										
Krakowiak (ex-	Vickers-Armstrong	1942										
Silverton)	White	1941										
La Combattante												
(ex-Haldon)	Fairfield	1942										
Lamerton	Swan Hunter	1941										
Lauderdale Ledbury	Thornycroft Thornycroft	1941 1942										
Liddesdale	Vickers-Armstrong	1941										
Melbreak	Swan Hunter	1942										
Mendip	Swan Hunter	1940										
Meynell	Swan Hunter	1940										
Miaoules (ex-	Swan Hunter	1942										
Modbury) Middleton	Vickers-Armstrong	1942										
Modbury	Vicacis-211 Historia	1012										
Oakley (ex-Tick-												
ham)	Yarrows	1942										
Pindos (ex-Bole-	Swan Hunter	1942										
broke) Pytchley	Scotts	1942										
Quantock	Scotts	1941										
Quorn	White	1940										
Rockwood	Vickers-Armstrong	1942										
Slazak (ex-	Hawthorn Leslie	1942								(		
Bedale) Southdown	White	1942										
Stevenstowe	White	1943										
Talybont	White	1943										
Tanatside	Yarrow	1942										
Tetcott	White	1941										
Themistocles (ex-	Stanhan	1942										
Bramham) Wensleydale	Stephen Yarrow	1942									-	
Whaddon	Stephen	1941				-						
Wheatland	Yarrow	1941										
Wilton	Yarrow	1942										
Zetland	Yarrow	1942		1								

			Dim	ensio	ns	crews	d		Mean		sequ	ent	
Name or Number.	Built by	Com- pleted	Length (extreme)	Веаш	Draught	Number of screws	Standard displacement	Horse- power	speed on trial, or ex- pected	Armaments	Torpedo tubes	Complement (war)	Fuel Oil
			Ft.	Ft.	Ft.		Tons		Knots				4-9
DESTROYERS—													
Town Class (ex-U.S.N.):  Churchill (ex-Herndon) Chesterfield (ex-Wood) Clare (ex-Upshur) Broadway (ex-Hunt) Burnham (ex-Alden)	Newport News S.B. Co.	1919– 1920	314.4	31	9.8	2	1,190	25,000	35	4 4-in., 1 3-in. A.A.	4 Trip. 21-in.	122	37
Cameron (ex-Welles) Bradford (ex-McLanahan) Burwell (ex-Laub) Buxton (ex-Edwards) Sherwood (ex-Rodgers) Ramsey (ex-Meade) Reading (ex-Bailey) Ripley (ex-Shubrick) *St. Francis (ex-Bancroft)	Bethlehem S.B. 6	1919	314.4	31	9.8	2	1,190	27,000	35	4 4-in., 1 3-in. A.A.	4 Trip. 21-in.	122	37
Caldwell (ex-Hale) Castleton (ex-A. Ward) Chelsea (ex-Crownin- shield) Lancaster (ex-Philip) Mansfield (ex-Evans) Montgomery (ex-Wickes) Wells (ex-Tillman)	Bath I.W.	1919— 1921	314.4	31	9.5	2	1,090	24,000	35	4 4-in., 1 3-in. A.A.	4 Trip. 21-in.	122	28
Wells (ex-Tillman) Richmond (ex-Fairfax) Leamington (ex-Twiggs)	Union I.W. New York	1918 1919	314-4	31	9.5	2	1,090	24,000	35	4 4-in., 1 3-in.	4 Trip		28
*Hamilton (ex-Kalk) Georgetown (ex-Maddox) Brighton (ex-Cowell) Roxborough (ex-Foote) Newport (ex-Sigourney) *Niagara (ex-Thatcher)	Fore River S.B. Co.	1918- 1920		31	9.8	2	1,060	27,000	35	4 4-in., 1 3-in. A.A.	4 Trip 21-in		28
Charlestown (ex-Abbott) St. Albans (ex-Thomas) St. Mary's (ex-Doran) *Columbia (ex-Haraden)	Newport News S.B.6.												
Newark (ex-Ringgold) Newmarket (ex-Robinson)	Union I.W.												
*Annapolis (ex-Mackenzie) *St. Clair (ex-Williams)	Union Plant												
Leeds (ex-Connor) Ludlow (ex-Stockton) Lewes (ex-Conway)	Cramp	1918	315.5	30.7	9.5	3	1,020	18,500	30	4 4-in., 1 3-in. A.A.	4 Trip 21-in		260

^{*} Royal Canadian Navy.

# Great Britain-continued.

SUBMARINES.

			1	imensio	ons	WS			speed		sequ	ent
Name or number	Where built	Completed	Length (extreme)	Beam	Draught	No. of screws	Dis- place- ment	Horse- power	Maximum s ₁	Armament	Torpedo tubes	Complement
Triton Class: Tactician Tallyho Taku Tantivy Thorough Thrasher Torbay Tradewind Trespasser Tribune Trident Truant Truculent Trusty Tudor Tuna	Vickers Vickers Chatham Vickers Vickers Vickers Cammell Laird Chatham Vickers Scotts Cammell Laird Scotts Vickers Vickers Vickers Vickers Devonport Scotts	1942 1943 1940 1943 1944 1941 1941 1942 1939 1939 1939 1942 1941 1944 1940	Feet 275	Feet 261	Feet 12	2	Tons 1,090 1,575	2,500 1,450	Knots 151 9	1 4-in., 1 smaller	21"	53
1940 " S " Class : Safari Sceptre Seadog Seanymph Seraph Shakespeare Sibyl Sportsman Storm Stratagem Stubborn	Cammell Laird Scotts Cammell Laird Vickers Vickers Cammell Laird Chatham Cammell Laird Cammell Laird Cammell Laird	1942 1943 1942 1942 1942 1942 1942 1943 1943 1943	215	24	101	2	960	1,550 1,330	134 9	1 3-in., 1 smaller	21"	48
Unity Class: * Ultmatum Umbra Una Unbending Unbroken Unison United Universal Unrivalled Unruly Unshaken Unsparing Upright Uproar	Vickers Vickers Chatham Vickers	1941 1941 1941 1942 1942 1942 1943 1942 1942 1942 1942 1942 1944 1941	190	16	13	2	540 730	615 825	111 10	1 3-in., 3 smaller	4-6 21"	27
Thames Class : Severn Clyde	Vickers- Armstrong	1935	345	28	13.7	2	$\frac{1,850}{2,723}$	10,000 2,500	$\frac{22\frac{1}{4}}{10}$	1 4-in., 2 smaller	6 21"	60
Porpoise Class :* Porpoise	Vickers- Armstrong	1933	289	29.8	13.8	2	$\frac{1,500}{2,053}$	$\frac{3,300}{1,630}$	15 84	1 4-in., 2 smaller	6 21"	55
Rorqual	Vickers	_1935	2711	251	15	2	$\frac{1,520}{2,157}$	$\frac{3,300}{1,630}$	15 <del>1</del> 8 <del>1</del>	1 4-in., 2 smaller	6 21"	55
Swordfish Class: Sunfish Seawolf Sealion Sturgeon	Chatham Scotts Cammell Laird Chatham	1937 1934 1938 1933	208·7 202·5	24 24	10·5 10·5	2	670 960 640 927	1,550 1,300 1,550 1,300	$   \begin{array}{r}     13\frac{3}{4} \\     \hline     10 \\     \hline     13\frac{3}{4} \\     \hline     10   \end{array} $	1 3-in., 1 smaller	6	40
Rainbow Class : Rover	Vickers- Armstrong	1931	290	29.8	13.8	2	$\frac{1,475}{2,035}$	4,400 1,320	171	1 4-in., 2 smaller	8	53
Odin Class: Osiris Otus	Vickers Vickers	1929 1929	2831	29.8	13.7	10	$\frac{1,475}{2,038}$	$\frac{4,400}{1,320}$	17½ 9	1 4-in., 2 Lewis	8 21"	53

^{*} Minelaying submarines.



			D	imensio	ns	screws			speed		tubes	ant
Name or number	Where built	Com- pleted	Length (extreme)	Beam	Draught	No. of scr	Dis- place- ment	Horse- power	Maximum sj	Armament	Torpedo tu	Complement
SUBMARINES— Oberon Class: Otway	Vickers	1927	Feet 275	Feet 27.7	Feet 13·3	2	Tons 1,354 1,872	3,000 1,350	Knots 151 9	1 4-in., 2 Lewis	8	93
L Class: L27 L26 L23	Vickers Vickers Vickers	1926 1926 1924	2381	231	11.7	2	760 1,080	2,400 1,600	17½ 10½	1 4-in., 1 Lewis	4	41
H Class: H50 H44 H34 H32	Beardmore Armstrong Cammell Laird Vickers	1920 1920 1919 1919	171	15.75	12.5	2	<u>410</u> 500	480 320	13 10½	1 Lewis	4	23
Midget Class: Number unknown												

Name	Dis- place ment	Length (extreme)	Beam (ex- treme)	Draught	Horse- power	Where built	Maker of machinery	Date of launch	Date of completion	Armament	Speed (knots)	Complement
SLOOPS— Modified Black	tons	ft. in.	ft. in.	ft. in.							nel san	
Swan Class: Amethyst Crane Cygnet Hart Hind Lark Lapwing Magpie Mermaid Peacock Pheasant Redpole Starling Whimbrel Wild Goose Woodcock Wren	1250				4300 P.T. (G.)	A. Stephen Denny C. Laird A. Stephen Denny Scotts Scotts Storts Thornycroft Denny Thornycroft Yarrow Yarrow Fairfield Yarrow Yarrow Yarrow Fairfield Denny	A. Stephen Denny C. Laird A. Stephen Denny Scotts Scotts Thornycroft Denny Thornycroft Yarrow Yarrow Fairfield Yarrow Yarrow Fairfield Denny	1942 1943 1943 1943 1943 1943 1943 1942 1942 1942 1942 1942	1942 1943 1944 1944 1944 1943 1944 1944	6 4-in., 10 smaller.	192	
Black Swan Class: Black Swan Erne Flamingo	1250				4300 P.T. (G.)	Yarrow Furness Yarrow	Yarrow R. Westgarth Yarrow	1940	1940 1941 1939	6 4-in., 10 smaller.	191	New York
Egret Class: Pelican	1250	292	37-6	8 4	3600 P.T. (G.)	Thornycroft	Thornycroft	1938	1939	6 4-in., 10 smaller.	191	18
Bittern Class: Enchantress Stork	1085 1100	282 282	37 0 37 0	8 6 8 6	3300 3300 P.T. (G.)	J. Brown Denny	J. Brown Denny	1934 1936	1935 1936	4 4·7-in., 1 3-in., 6 4-in.	182	12
Grimsby Class: Aberdeen Deptford Fleetwood Leith Londonderry Lowestoft Wellington	990	266	36 0	7 6	2000 P.T. (G.)	Devonport Chatham Devonport Devonport Devonport Devonport Devonport	Thornycroft J. S. White Thornycroft J. S. White	1936 1935 1936 1933 1935 1934 1934	1935 1936 1934 1935 1934	2 4-in. 2 4-7-in. 4 4-in. 2 4-7-in. 4 4-in. 4 4-in. 2 4-7-in.	161	100

Name	Dis- place- ment	Length	(extreme)	Bea (e: trei	X-	Decurebt	Draugue	Horse- power	Where built	Maker of machinery	Date of launch	Date of completion	Armament	Speed (knots)	Complement
SLOOPS—contd. Repeat Shore-	tons	ft.	in.	ft.	in.	ft.	in.				111	71 1	of the amplified to	VECTOR TO	1138
ham Class: Falmouth Weston	1060	281	4	35	0	8	3	2000 P.T. (G.)	Devonport Devonport	H. Leslie Yarrow	1932 1932	1932 1933	2 4-in. H.A., 4 smaller.	161	100
Shoreham Class: Bideford Fowey Rochester Shoreham	1105	281	4	35	0	8	3	2000 P.T. (G.)	Devonport Devonport Chatham Chatham	J. S. White J. S. White J. S. White J. S. White	1931 1930 1931 1930	$\begin{array}{c} 1931 \\ 1932 \end{array}$	2 4-in. H.A., 6 smaller.	161	100
Hastings Class: Folkestone Scarborough	1045	266	4;	34	1	9	1	2000 P.T. (G.)	Swan Hunter Swan Hunter	H. Leslie H. Leslie	1930 1930	1930 1930	1 4-in., 2 4-in.	161	100
Bridgewater Class: Sandwich	1045	266	4	34	1	9	1	2000 P.T.	H. Leslie	H. Leslie	1928	1929	1 4-in., 10 smaller.	161	100
TRIGATES— Captains Class: Affleck Aylmer	1300							(G.)	Built in U.S.A.		1943	1049	3 3-in., 8 smal-	20	
Bayntum Bazely Bazely Bentinck Bentley Berry Bullen Braithwaite Burges Byard Byron Calder Capel Conn Cooke Cosby Cotton Cranstoun Cubitt Curzon Dakins Deane Domett Drury Duckworth Duff Ekins Essington Fitzroy Fritzroy Fritzroy Gardiner Gardiner Gardiner Garlies Goodall Goods Gore Grindall Halsted Hargood Halsted Hargood Holmes Hoste Hotham Inglis Inman Kempthorne Lawson Loring Louis Manners Moorsom Mounsey Narbrough															

Name	Dis- place- ment	Length (extreme)	Beam (ex- treme)	Draught	Horse- power	Where built	Maker of machinery	Date of launch	Date of completion	Armament	Speed (knots)	Complement
FRIGATES (cont.) Captains Class —contd. Rowley	tons	ft. in.	ft. in.	ft. in.		Built in U.S.A.			1049	99 in Samal	20	
Rupert Rutherford Seymour Spragge Stayner Stockham Thornborough Torrington Trollope Tyler Waldegrave Whitaker		••		••		Built in U.S.A.		1943	1943 -44	3 3-in., 8 smal- ler.	20	
Colony Class: Anguilla Antigua Ascension Bahamas Barbados Cajeos Cayman Dominica Labuan Montserrat Nyasaland Papua Perim Pitcairn Sarawak Seychelles Somaliland St. Helena Tobago Tortola		304				Built in U.S.A.		1943	1944	3 3-in., 8 smal ler.		
Loch Class: Loch Achanalt Loch Alvie Loch Dunvegan Loch Fada Loch Killin Loch Morlich	1445	304						1943 -44		1 4-in., 10 smaller.		
River Class: Aire Annan Avon Awe Ballinderry Bann Barle Cam Chelmer Cuckmere Dart Derg Deveron Dovey Ettrick Evenlode Exe Fal Findhorn Halladale Helford Helmsdale Inver Jed Kale La Surprise L'Aventure La Decouverie	1445	303						1941	1943 -44	2 4-in., 8 smal- ler.	20	

Name	Dis- place ment	Length (extreme)	Beam (ex- treme)	Draught	Horse- power	Where built	Maker of machinery	Date of launch	Date of completion	Armament	Speed (knots)	Complement
FRIGATES (cont.) River Class—	tons	ft. in.	ft. in.	ft. in.				111	-1	( ) ( ) ( ) ( ) ( ) ( )	5/11	
contd. L'Escar- mouche Lochy Lossie Meon Monnow Moyola Nadder	1445	303						1941 - 43	1943 -44	2 4-in, 8 smaller.	at a set of	HAT IN ALL AND
Nene Ness Odzani		11				A se har					10 m/s	
Parret Plym Rother						# a T = 1					100 mm	
Shiel Spey Swale Taff Tay Tavy						(17) (2) (17) (2) (2)					A) 100	
Tees Teme Test						L W-12					Tit (3)	
Teviot Towy Trent Usk Wear						1 - 17 11 - 12 - 17					correction of the correction o	
Wye CORVETTES—						** TOTAL		1943	1040		0 000 0 000 0 000	
Castle Class: Allington Castle Bamborough			•••						-44		OKEY OUR OFFI OFFI OFFI OFFI OFFI OFFI OFFI OFFI	
Castle Berkeley Castle											all age	
Castle Carisbrooke Castle											in section	
Dumbarton Castle Flint Castle Hadleigh											gri g e pr	
Castle Kenilworth Castle						-					+ 170 mm	
Knares- borough Castle						2 - 10 - 11					1/	
Lancaster Castle Launceston Castle											atriate atriate	
Leeds Castle Morpeth Castle						100-01					CLH   ITE	
Oxford Castle Pevensey Castle						10					Sharing TV July	
Portchester Castle Rushen Castle						11					M.	
Tintagel Castle Tunsberg Castle											a to the	
Modified Flower Class:											them of	
Betony Bugloss Burnet Charlock Dittany								1942 -43	1943	1 4-in., 4 smal- ler.	Altro Sen Altro Sen Altro Sen Altro	

Name	Dis- place- ment	Length (extreme)	Beam (ex- treme)	Draught	Horse- power	Where built	Maker of machinery	Date of launch	Date of completion	Armament	Speed (knots)	Complement
CORVETTES— contd. Modified Flower Class—contd. Honesty	tons	ft. in.	ft. in.	ft. in.				1942	1943	1 4-in., 4 smal-	D) SETA	est onli
Linaria Rosebay Smilax Statice Willowherb								-43		ler.	shy safe on on safe gola	が京家のた
Abelia Alisma Anemone Anabis Anemone Arabis Armeria Aster Aubrietia Azalea Balsom Bellwort Bergamot Bluebell Borage Bryony Burdock Buttercup Camellia Campion Campanula Carnation Celandine Chrysan- themum Clarkia Clematis Clover Coltafoot Columbine Convolvulus Coreopsis Cowesip Crocus Cyclamen Dahlia Delphinium Dianella Dianthus Freesia Fritillary Genista Gentian Geranium Gloxinia Godetia Heather Hyderabad Honeysuckle Hydrangea Jasmine Jasmine Jasmine Lavender Loosestrife Lotus Mallow Marguerite Meadowsweet Monkshood Myosotis Narcissus Nasturtium Nigella	925					Harland & W. Harland & W. Harland & W. Blyth G. Brown Harland & W. Blyth G. Brown Harland & W. G. Brown Harland & W. Harland & W. Harland & W. J. Crown Harland & W. J. Crown Harland & W. J. Crown Harland & W. Harland & W. J. Crown Harland & W. J. Crown Harland & W. Harland & W. J. Crown Harland & W. J. Crown Harland & W. J. Crown Harland & W. Harland & W. W. J. Lewis J. Crown Harland & W. Hall Russell			1940	1 4-in., 4 smaller.	The state of the s	

Name	Dis- place- ment	Length (extreme)	Beam (ex- treme)	Draught	Horse- power	Where built	Maker of machinery	Date of launch	Date of completion	Armament	Speed (knots)	Complement
CORVETTES—contd. Flower Class—contd. Pennywort Pentstemon Petunia Pimpernell Pink Poppy Potentilla Primrose	tons	ft. in.	ft. in.	ft. in.		A. & J. Inglis Philip H. Robb Harland & W. H. Robb A. Hall W. Simons W. Simons			1940 -41		Arm was	78— 85
Primula Rhododen- dron Rock Rose Rose Rose Saxifrage Snowdrop Snowflake Spiraea Starwort Stonecrop Sunflower Sunflower Tulip Verbena Vervain Vetch Violet Wallflower Woodruff						W. Simons Harland & W. C. Hill W. Simons C. Hill Smith's Dock Smith's Dock A. & J. Inglis Smith's Dock W. Simons Smith's Dock W. Simons	Harland & W.				1	
Guillemot Class: Guillemot Shearwater	580	233 0	25 6	6 6	3600 P.T. (G.)	Denny J. S. White	Denny J. S. White		1939 1939		20	60
Kingfisher Class: Kingfisher Kittiwake Mallard Puffin Sheldrake Widgeon	530	243 0	26 6	6 6	3600 P.T. (G.)	Fairfield Thornycroft Stephen Stephen Thornycroft Yarrow	Fairfield Thornycroft Stephen Stephen Thornycroft Yarrow	1936	1936 1936 1937	1 4-in., 4 smal- ler.	20	60
CUTTERS (ex- U.S.N.): Banff (ex- Saranac) Fishward (ex- Tahoe) Gorleston (ex- Itasca) Landguard	1900	250 0	42 0	16 0	3000 T.E.	General El. Bethlehem General El. General El.	Westinghouse Westinghouse Westinghouse Westinghouse	1928 -30	1928 -30	1 4-in., 1 3-in., 6 smaller.	16	
(ex-Shoshone) Lulworth (ex-Chelan) Sennen (ex-Champ- plain) Totland (ex-Cayuga)						Bethlehem Bethlehem United D.D.	Westinghouse Westinghouse Westinghouse				tought transition (1) of the objection (1) to (1)	
MINESWEEPERS Algerine Class: Acute Albacore Antares Arcturus Aries Brave Cadmus Chameleon Circe Clinton Cockatrice Coquette		225 0						1942 -44	1942 -44	1 4-in. H.A., 4 20-mm.	Transport of the second of the	

Name	Dis- place- ment	Length (extreme)	Beam (ex- treme)	Draught	Horse- power	Where built	Maker of machinery	Date of launch	Date of completion	Armament	Speed (knots)	Complement
MINESWEEPERS —contd. Algerine Class —contd. Courier Espiégle Fancy Fantome Felicity Fly Friendship Golden Fleece Gozo Hound Hydra Larne Lennox Lightfoot Mary Rose Melita Moon Mutine Octavia Onyx Orestes Pelorus Persian	tons	ft. in. 225 0	ft. in.	ft. in.					1942 -44	1 4-in. H.A., 4 20-mm.	To the second se	· 生代性門院在代付 市品 - 通信日
Pickle Pincher Plucky Postillion Prompt Providence Rattlesnake Ready Recruit Regulus Rifleman Rinaldo Rosaria Rowena Seabear Serene Spanker Squirrel Stormcloud Sylvia Tanganyika Thisbe Truelove Vestal Waterwitch												NAME OF THE PARTY
angor Class: Ardrossan Bangor Beaumaris Blackpool Blyth Bootle Boston Bridlington Bridlington Bridport Brixham Bude Dornoch Dunbar Eastbourne Fort York Fraserburgh Ilfracombe Llandudno Lyme Regis Parrsboro Peterhead Polruan Poole Qualicum Rhyl	600-700	170- 180 0	28 6	9 6	2000 P.T. (G.) or 2800 R.	Blyth Warland & W. Ailsa Harland & W. Blyth Ailsa Denny Denny Blyth Lobnitz Ailsa Blyth Lobnitz Hamilton Lobnitz Hamilton Stephen Dufferin Blyth Ailsa Stephen Toronto Lobnitz		1940 -41	1940 -42	1 3-in. H.A., several smaller.	161	

Name	Dis- place- ment	Length (extreme)	Bear (ex- treme	62	Horse- power	Where built	Maker of machinery	Date of launch	Date of completion	Armament	Speed (knots)	Complement
MINESWEEPERS	tons	ft. in.	ft. in	ft. in.								_
—contd. Bangor Class— contd.												
Romney Rothesay Rye Seaham Shippigan Sidmouth Stornoway Tadoussac Tenby Wedgeport Whitehaven Worthing	600– 700	170–0 180		96	2000 P.T. (G.) or 2600 R.	Lobnitz Hamilton Ailsa Lobnitz Toronto H. Robb H. Robb Horonto Hamilton Toronto Philip Philip			1940 -42	1 3-in. H.A., several smaller	161	
Halcyon Class: Gleaner	815	245 0	33 (	7 6	1750 P.T.	W. Gray	Central Marine	1937	1938	1 4-in., several smaller.	17	80
Hazard					(G.)	W. Gray	Central Marine	1937	1937	smaner.		
Jason Seagull Sharpshooter Speedy Halcyon Harrier Speedwell Salamander					1770 R. 2000	Ailsa Devonport Devonport Hamilton J. Brown Thornycroft Hamilton J. S. White	Thornycroft Richardsons J. S. White J. S. White J. Brown Thornycroft Beardmore J. S. White	1937 1937 1936 1938 1933 1934 1935 1936	1938 1937 1939 1934 1934 1935			
TWIN SCREW MINESWEEPERS: Albury Alresford	710	231 0	28	9 0	2200 recip.	Ailsa Ailsa	Ailsa W. H. Allen	1919	1919 1919	1 4-in., 1 12- pr. A.A., Alres- ford, Cater-	16	73
Bagshot Derby Fareham						Ardrossan Dry Dock Co. Clyde S.B. Co. Dunlop, Bremner	W. H. Allen Clyde S.B. Co. Dunlop, Bremner	1918 1918 1918	1918	ford, Cater- ham, Ross and Saltburn no armament.		
Elgin Sutton Saltash						Simons McMillan Murdock &	Simons Yarrow Yarrow	1918 1918 1918	1919			
Saltburn						Murray Murdock &	Yarrow	1918	1919			
Selkirk						Murray Murdock & Murray	D. Rowan	1918	1919			
Ross Harrow						Lobnitz Eltringham	Lobnitz Wallsend Slipway	1919 1918	1919 1918			
Lydd Pangbourne Tedworth	675	231 0	28 (	9 0	1800	Fairfield Lobnitz Simons	Fairfield Lobnitz Simons	1918 1917 1917	1917	1 3-in. A.A.	16	35
Kellett	800	231 0	28 7	7 6	recip. 2200 recip.	Simons	Simons	1919	1919	1 3-pr.	16	86
RIVER GUN-					recip.				-			
Locust	585	197 0	33 8	5 0	3800 P.T.	Yarrow	Yarrow	1939	1940	2 4-in., many smaller.	17	
Aphis	625	237 6	36 (	4 6	(G.) 2000 recip.	Ailsa	Ailsa	1915	1915	2 6-in., 1 3-in. A.A., 1 2-pr.,	14	55
Cockchafer Gnat					1 5	Barclay Curle Lobnitz	Barclay Curle Lobnitz	1915	1916 1915	2 6-in., 1 3-in. A,A., 8 L.		
Scarab					-	Wood, Skin- ner	N.E. Marine	1915	1915	8 L. 2 6-in., 1 3-in. A.A., 1 2-pr.,		
Tarantula			-	+		Wood Skin- ner	N.E. Marine	1915	1916	8 L. 1 6-in., 1 3-in. A.A., 1 2-pr.,		
Seamew	262	165 0	27 (	4 6	1370	Yarrow	Yarrow	1928	1928	8 L.	14	

# Argentine Republic.

			Din	nensio	ons	screws	ent				tubes	nt	
Name or number	Where built	Launched	Length (extreme)	Beam	Draught	Number of se	Displacement	Horse- power	Speed	Armament	Torpedo tu	Complement	Fuel Oil
DESTROYERS— Cervantes(ex-Spanish Churruca Juan de Garay (ex- Spanish Alcala	Cartagena	1925	Feet 318		Feet 101	2	Tons 1522	42,000	Knots 36	5 4·7-in., 1 3-in. A.A., 4 M.	2 triple 21-in.		Tons 540
Galiano) Mendoza La Rioja Tucuman	J. S. White, Cowes	1928 1929 1929	335	31.8	12‡	2	1466	45,000	36 (La Rioja 39:4 t.)	5 4·7-in., 1 3- in. A.A., 2 2- pr., 4 M.	2 triple 21-in.	160	700
Catamarca Jujuy Cordoba	Schichau Germania Shichau	1911 1910	288·7 2954	271	10 10	2		28,000 28,000	32 34·7 t.	3 4-in., 2 1-pr.	4 21-in.	100	99
La Plata San Juan	Germania J. Brown	1911 1937	323	33	81	2		34,000	351	4 4·7-in., 8 smaller.	2Q 21-in.	150	17
San Luis Misiones Santa Cruz	Cammell Laird	1937	323	33	81			34,000	351	smaller. 4 4·7-in., 8 smaller.	2Q 21-in.	170	1
Buenos Aires Entre Rios	Vickers, Barrow	1937	323	33	81	2	1350	34,000	351	4 4.7-in., 8 smaller.	2Q 21-in.	160	450
SUBMARINES— Santa Fe Salta Santiago del Estero	Taranto	1931 1932 1933	226	212	13	2	850 1080	3000 1300	17.5	1 4·7-in., 1 2- pr. A.A.	8 21-in.	41	-

Torpedo tubes : Q-quadruple.

# Brazil.

111	19 - Helen	,	Din	nensi	ons	rews	nt				pes	int	Fuel
Name or number	Where built	Launched.	Length (extreme)	Beam	Draught	Number of screws	Displacement	Horse- power	Speed	Armament	Torpedo tubes	Complement	Coal
DESTROYERS— Amazonas Araguaia Acre Ajuricaba Apa Araguari	Rio de Janeiro	Bldg.	Feet 3601 w.l.	Feet 34‡	Feet 910"	2	Tons 1500	43,000	Knots 36·5	5 5-in., 4 M.	3 21-in. (Q.)	190	Tons 500
Araguan Greenhalgh Marcilio Dias Maris E. Barros Piaui Matto Grosso †Paraiba Rio Grande do Norte Santa Catarina	Yarrow	1940 1908 1908 1909	240	23.6	7.5	2	560	8000	27 (27·1– 28·7 on trials)	2 4-in., 4 3-pr.	2 18-in.	75	140
Sergipe Marauhao (ex-Por- poise)	Thornycroft	1909 1913	265.3	26.5	10	2	934	22,500	31	3 4-in., 1 2-pr.	2 21-in. (D.)	100	- 250
SUBMARINES— Humaita	Spezia (Ansaldo	1927	282	25.6	14	2	1450 1884	4800 2200	18.5	1 4.7-in. A.A.; 4 M., 20 mines	6 21-in.	55	- 140
Tamoia Tymbira Tupi	Fiat) Spezia (Orlando)	1937	1971	21	141	2	855	1350 8	14 8	1 3.9-in., 2 M. A.A.	6 21-in.	33	

† Training Ship.

# Chile.

Name or number	Where built	Launched	Dimensions			screws	ent				tubes	ent	Fuel
			Length (extreme)	Beam	Draught	Number of so	Displacement	Horse- power	Speed	Armament	Torpedo tu	Complement	Coal
DESTROYERS— Serrano Orella Riquelme Hyatt Videla	Thornycroft's	1928	Feet 300	Feet 29	Feet 9	2	Tons 1090	28,000	Knots 35	3 4·7-in., 1 3-in.	2 triple 21-in.	130	Tons 340
Aldea Almirante Lynch Almirante Condell	White	1912 1913	320 p.p.	32.6	11-1	3	1850	30,000	31	6 4-іп., 4 м.	4 18-in.	190	427 80
SUBMARINES— Capitan Thompson Almirante Simpson Capitan O'Brien	Vickers Arm- strong's	1929 1929 1928	275	27.5	14.8	2	1520 1990	$\frac{2750}{1300}$	15 9	1 4-in.	8 21-in.	54	
H 1. Gualcolda H 2. Tegualda H 3. Rucumilla H 4. Guale H 5. Quidora H 6. Fresia	Fore River, U.S.A.	1915	150-3	15-75	12.3	2	355 470	480 640	13 11	moder of modern	4 18-in,	22	17.5

3 submarines are projected.

### Denmark.

Name or number	Where built	-	Dimensions		ons	crews	ent	1		7'4 17' V	bes	nt	Fue
		Launched	Length (extreme)	Beam	Draught	Number of screws	Displacement	Horse- power	Speed	Armament	Torpedo tubes	Complement	Coal
TORPEDO BOATS	Royal Dockyard, Copenhagen		Feet	Feet	Feet		Tons		Knots	DATE I	-	T luc	Tons
First Class: T4. Glenten		1934	198-9	19.5	7.8	2	285	6,000	271	2 3·4-in., 2·78	6	51	40
T5. Hogen T6. Ornen T3. Laxen T1. Dragen T2. Hvalen R4. Havkatten ‡ R5. Sælen ‡ R3. Nordkaperen ‡ S6. Narhvalen †		1930 1929 1930	198-9	19-5	7.4	2	281	6,000	271	M., 2 M. 2 3-in., 2 ·78 M., 2 M.	17·7-in. 8 17·7-in.	51	26
		1919 1919 1918 1917	126-3	13-9	9	2	110	2,000	24·6 t.	2 6-pr. A.A.	(1 in R2-4)	24	15
S4. Söhunden † S2. Stören †		1917		100	4	11	VIII I	(-)1		190 F 15		many)	107
S1. Springeren † P1. Hvalrossen ‡		1916 1913	148-2	16-9	7.5	2	158	3,480	26·2 t.	1 3-in., 1 M.	4 18-in.	34	29
S3. Söridderen †	Yarrow & Co.	1911	126-3	15	9	2	110	2,000	24.3	2 6-pr. A.A.	1	24	15
Two in number	Royal Dockyard, Copenhagen	Bldg.	279	27.4	8	2	700	21,000	35	2 4-in., 4 1·5- in.	21-in.	u čiću	n.A.
SUBMARINES— Daphne. D1 Dryaden. D2		1926	161	16	8.2		305 380	900	7	1 3-in. A.A., 1 ·78 M.		25	<u>-</u>
Flora, C3 Bellona, C2		1919	155.7	15.7	9	2	$\frac{301}{369}$	900	14.5	1 6-pr.	5 18-in.	24	13
Rota, C1 § Galathea, B12		Or Or	133-3	13.4	8	2	$\frac{181}{231}$	450 840	13·5 9·8	1 6-pr.	3 18-in.	14	9
Triton. B10 Ran. B9		1914 1915	e ()	=			r-HZ	18	M.	memany)	-		MT
Havhesten, E4. Havkalen, E3 Havfruen, E2 Havmanden, E1 Havhornen		1939 1937 1937 1936 Bldg.	155-6	15.3	9-4	2	320 420	220	15 8	2 1·5-in.	5 18-in.	20	n K

[†] Used as minesweepers.

[‡] Used as patrol vessels.

[§] Rota has one deck tube in addition.

### France.

		p	Di	mens	ions	crew	nent				sequ	ent	
Name or number	Where built	Launched	Length (extreme)	Beam	Draught	Number of screws	Displacement	Horse- power	Speed	Armament	Torpedo fubes	Complement	Fue
FLOTILLA LEADERS— Le Fantasque Le Malin	Lorient Ch de la Mediterranée	1934 1934	Feet 434		Feet 14	2	Tons 2569	Le T did 45	errible	5 5·4-in., 4 1·5- in. A.A.	3 21·7-in. (T.)	220	Tor 65
Le Triomphant Le Terrible	Ch. de France Ch. Naval							on	trial			50	Ľ.
Albatros	Français St. Nazaire	1930	423	40	14	2	2441	64,000	36	5 5·4-in., 4 1·5-in. A.A.	6 21·7-in.	220	65
Tigre	Nantes	1924	416	37	171	2	2126	55,000	35.5	5 5·1-in.	2 21·7-in. (T.)	206	53
DESTROYERS— Le Hardi Mameluck *	Loire	1938	363	361	101	2	1772	58,000	37	6 5·1-in., 2 1·5- in.	7 21·7-in.	175	48
Adroit ex-Epée * Siroco ex-Corsaire * Bison ex-Le Flibus- tier *	Gironde La Seyne	1940 1940									staneni. staneni. stdere	100	a a
Forbin Basque Bordelais * L'Aleyon Le Fortune Le Mars *	Havre Maritime Bordeaux Bordeaux Caen	1928 1929 1928 1926	351.7	32-2	10.2	2	1378	31,000	33	4 5·1-in., 2 1·5-in. A.A.	2 21·7-in. (T.)	146	30
La Palme Ouragan Simoun Tempête	Nantes Caen St. Nazaire Nantes	1924 1924 1925	347	33.0	13.9	2	1319	33,000	33	4 5·1-in., 2 1·5- in. A.A.	2 21·7-in. (T.)	138	30
Trombe La Combattante (ex-H.M.S. Haldon)	Harfleur Fairfleld	1925 1942			••	• •	,.			4 4-in.	5Aba y	5.00	2.
TORPEDO BOATS— La Melpomène * La Flore * L'Incomprise	Nantes Le Trait	1935 1937	264.9	26.0	9.2	2	610	22,000	34.5	23.9-in., 4 M. A.A.	21·7-in. (D)	131	90
IST CLASS SUB-							Surf.	Surf. Sub.	Surf. Sub.		(10) (10)	世の	100
MARINES— Casabianca * Le Glorieux Le Centaure L'Espoire	Ch. de la Loire Cherbourg Cherbourg Cherbourg	1935 1932 1933 1931	302.8	27	16	2	1379 2060	8000 2000	$\frac{18}{10}$	1 3·9-in., 1 1·5- in. A.A.	11	63	
Pégase * Acheron * Argo	St. Nazaire St. Nazaire Nantes	1930 1929 1930	301.8	27	16	2	$\frac{1379}{2060}$	6000 2000	$\frac{17}{10}$	1 3.9-in., 1 1.5- in. A.A.	11	61	96
Pascal * Archimede Fresnel *	Brest Caen St. Nazaire	1928 1929	302.5	27	16	2	$\frac{1379}{2060}$	$\frac{6000}{2000}$	$\frac{17}{10}$	1 3.9-in., 1 1.5- in, A.A.	11	61	96
Redoubtable * Vengeur *	Cherbourg	1928	302.5	27	16	2	$\frac{1384}{2080}$	$\frac{6000}{2000}$	$\frac{17}{10}$	1 3.9-in. A.A., 1 1-pr. A.A.	11	63	96
Requin Caiman * Dauphin Espadon Marsouin Phoque *	Toulon Brest	1924 1927 1925 1926 1924 1926	2571	23	172	2	$\frac{974}{1415}$	1800	16 10	1 3.9-in. A.A.	10 21·7	54	100
Nautilus Turquoise	Toulon	1930 1925	216½	23.3	13.5	2	910	$\frac{1300}{800}$	12 9	1 3-in. M.	5 21·7-in.	40	
Narval (ex-Italian Bonzo)	Taranto		195		,.	2				1 3·9-in.	6 21-in.	37	

• Under Axis control.

### France—continued.

		_	Dir	nensi	ons	rew	ent b.				seg	nt	
Number and name	Where built	Launched	Length (extreme)	m l	ght	Number of screws	Displacement Surf./Sub.	Horse- power	Speed Surf.	Armament	Torpedo tubes	Complement	Fuel
	734	La	Ler (extr	Beam	Draught	Num	Disp		Sub.		Torp	Con	
2ND CLASS SUB- MARINES-	tennit   Lond	Dy 10		-	Feet		Tons 893	3000	Knots 14.5	4 mm N 2	denimi ra	PELL	Ton
L'Aurore *	Toulon	1940	238.3	20.3	12.3	2	1170	1400	9	1 3.9-in., 2.5 M.	9 21·7-in.	44	
L'Astree	Worms			-	×						21 1 111.		
Ceres	Le Trait	1938	223.5	18-3	11.3	2	800	$\frac{1800}{1120}$	14 9	13·in., 2 M.	9 21·7-in.	48	N.
Minerve Junon Vénus * Iris	Cherbourg Havre Worms Dubigeon	1934 1935 1935 1934	224	171	13	2	597 800	$\frac{1300}{1230}$	14 9	1 3-іп., 2 м.	9 21·7-in.	43	000
Orphée La Vestale	Ch. Normand, Havre Schneider	1932 1932	210	20	13	2	558- 570 787	1300 1000	14 9	1 3-in., A.A.	6 21·7-in. 2 15·7-in.	43	Mar.
Antiope Atalante Amazone Diane Aréthuse	Havre Schneider Le Trait Havre Schneider	1932 1930 1932 1930 1929	216	20	13	2	565- 571 787	1300	14 9·2	1 3-in. A.A.	6 21·7-in. 2 15·7-in.	43	2 12
Ariane Danaé Eurydice *	Havre	1925 1927 1927	216.5	20	13	2	576 766	$\frac{1200}{1000}$	14	1 3-in, A.A.	7 21·7-in.	40	ge
Circé Calypso Thétis	Schneider	1925 1926 1927	204.5	21	12.8	2	765	$\frac{1250}{1000}$	14	1 3-in. A.A.	7 21·7-in.	40	100
Naîde * Sirène * Galatée	St. Nazaire	1925 1925 1925	210	21	143	2	744	1300 1000	14 9·5	1 3-in. A.A.	7	39	,.
MINELAYING SUB- MARINES— Perle Le Diamant • Rubis	Toulon	1933 1933 1930	216-5	23.3	13.5	2	669 910	1300 800- 1000	12 9	1 3-in., 1 M., 32 mines.	5 21·7-in.	40	1.

French submarines are divided into two classes. 1st class: All vessels of 900 tons and above in the surface condition 2nd class. All smaller vessels, including the minelayers.

^{*} Under Axis control.

# Germany.

		T T	Din	nensi	ons	crew	ent				bes	ant	Fue
Name or number	Where built	Launched	Length (extreme)	Beam	Draught	Number of screws	Displacement	Horse- power	De- signed speed	Armament	Torpedo tubes	Complement	OI
DESTROYERS— (Z 4) Richard Beitzen (Z 5) Paul Jacobi	Deutsche Werke, Kiel Germania-	1935	Feet 374	Feet 37	Feet 91	2	Tons 1625	40,000	Knots 36	5 5-in., 4 1·5- in.	2 21-in. (Q.)	252	Tor 50
(Z 6) Theodor Riedel (Z 7) Hermann	Werft, Kiel												100
(Z 10) Hans Lody	Deschimag, Bremen											إخادد	101
(Z 14) Friedrich Ihn (Z 15) Erich Steinbrinck	Blohm & Voss, Hamburg										7	No.	
Z 20 Karl Galster	Deschimag, Bremen	1938	3851			2		55,000	36	5 5-in., 4 1·5- in.	2 21-in. (Q.)	280	
Z 23–40 Narvik Flotilla	Bremen	1939 -42	3851	381	91	2	2400	55,000	36	5 5.9-in.			4
Elbing Class			330				1100		35	4 4·1-in.	2 21-in, (T.)		
T. 1-20	Bremen	1938- 1940	267	281	61	2	600	25,000	36	1 4·1-in., 1 1·5- in.	2 21-in. (T.)	110	
SUBMARINES—† U 2-6	Deutsche Werke, Kiel	1935	1361	13	121	2	250	700	13 7	1 1-pr.	3 21-in.	23	
U 7-11, 17, 20-24	Germania Werft, Kiel	1936			:							(pul)	ŕ
U 28-34	Deschimag, Bremen	1936	206	19	13		500		$\frac{16.5}{8}$	13.5-in., 11-pr.	5 21-in.	35	
U 37, 38, 43	Deschimag, Bremen	1939	246	20.6	13.5		740	3200	$\frac{18.5}{9}$	1 4-in., 1 1-pr.	6 21-in.	40	
U 45-55	Krupp Germania		213	19.7	13-1	2	517	2100	$\frac{16.5}{8}$	1 3·5-in., 1 1-pr	5 21-in.	35	
U 56-63	Deutsche Werke, Kiel		136-5	13	12.5	2	<u>250</u>	700	$\frac{13}{7}$	1 1-pr.	3 21-in.	23	
U 65-68	Deschimag, Bremen		246	20.6	13.5	2	740	3200	18.5	1 4-in., 1 1-pr.	6 21-in.	40	
U 69-76	Krupp Germania		213	19.7	13.1	2	517	2100	$\frac{16.5}{8}$	1 3·5·in., 1 1-pr.	5 21-in.	35	
‡U 570													
U.D. 345 (ex-Dutch)													

[†] The strength of the German Submarine Fleet is not known.

[‡] Captured by British Hudson Aircraft.

### Greece.

		п	Din	ensid	ons	screws	ent				pes	nt	Fuel
Name or number	Where built	Launched	Length (extreme)	Beam	Draught	Number of se	Displacement	Horse- power	Maxi- mum trial speed	Armament	Torpedo tubes	Complement	Coal
DESTROYERS— ex-British Hunt Class— Adrias Crete Kanares Miaoules Pindos Themistocles	Vickers "Swan Hunter	1941- 42 " " 1931	1		Feet		Tons	,	Knots	4 4-in.	2 21-in.		Tons
Paul Coundouriotis Spetsai	Odero, Genoa	1931 1931	308·8 314·8	30.3	10.5	2 2	1230 1308	30,000 30,000	40 40	4 4.7 in., 4 2- pr. A.A., 40 mines.	6 21-in. (T.)	156	630
*Aetos *Panther, *Ierax	Birkenhead	1911	293	27.7	9.6	2	1013	19,750	32	4 4-in., 2 2-pr. (Panther and Actos, 40	6 21-in. (T.)	102	
Salamis	Palmers	1930	323	32.3	10-0	2	1360	34,000	36	mines). 2 4·7-in.	4 21-in.		
Navarinon	Denny	1934	329	33.3	10-0	2	1350	36,000	36	3 4·7 in., 1 3- in.	21-in. 21-in.		<del>-</del> 480
TORPEDO BOATS-Aigli	Stettin (Vulcan)		147-8	9	4	2	142	2400	25	2 6-pr.	2 18-in.		25
‡Pergamos	Fiume	1914	178-4	18.8	5	2	237	5000	281	1 11-pr.	3 18-in.	25	31
‡Proussa	,,	1914	178-4	18.8	5	2	237	5000	281	1 11-pr.	10		01
CORVETTES— Apostolis (ex-British Flower Class) Criezis Tombazis Saktouris							Surf.		Surf.	914			
SUBMARINES— †Papanicolis	Ch. de la Loire, Nantes	1926	203	17.7	12.3	2	567 760	$\frac{1300}{1000}$	9.5	1 4-in., 1 2-pr.	6 21-in.	30	
Nereus	,,	1927	226	18	12.6	2	689 945	$\frac{1500}{1200}$	9.5	1 4-in., 1 2-pr.	8 21-in.	42	
Pipinos Matrozos											- III.	e la	

[•] Reconstructed by Messrs. J. S. White & Co., Cowes, 1924-25. 

Some of the above vessels are under British control, including †.

Italy.*

		70	Dir	nensi	ons	crew	rd		Maxi-		pes	ent	
Name or number	Where built	Launched	Length (extreme)	Beam	Draught	Number of screws	Standard Displacement	Horse- power	mum trial speed	Armament	Torpedo tubes	Complement	Oil
DESTROYERS— Augusto Riboty Carlo Mirabello	Ansaldo ,,	1916 1915	Feet 340	Feet 32	Feet 9.8	2	Tons 1382	35,000	Knots 35	8 4-in., 4 2-pr. A.A., 100 mines.	2 18-in. (D.)	150	Tons
Artiglieri † Ascari	Odero-Terni Orlando	1938	350	33.4		2	1620	48,000	39	4 4·7-in., 4 1·5- in. A.A.	6 21-in.	170	500
Corazziere Geniere Aviere	"	"	"	,,	"	"	"	"	"	"	"	31 31	"
Carabinjere	Cartieri Dell' Tirreno	1938	350	33.4	10-9	2	1620	48,000	39	4 4·7-in., 4 1·5- in. A.A.	6 21-in.	170	500
Granatiere	Riva Trigoso Cartieri Navali	1938	,,	,,	,,	,,	,,	,,	,,	,,	(T.)	**	n
Fuciliere †	Palerino Cantieri	1938	,,	,,		,,	,,	,,	,,	,,	***	19	>>
A. Oriani †	Orlando	1936	350	331	10	2	1570	48,000	39	4 4·7-in., 4 1·5- in. A.A., carry	6 21-in.	157	MATE .
Grecale † Maestrale	Ancona	1934 1934	350	331	10	2	1449	44,000	38	mines 4 4·7-in., 4 1·5- in. A.A.	(T.) 6 21-in.	156	600
Dardo	Odero, Sestri	1930	315	32	9.5	2	1206	44,000	38	4 4·7-in., 4-in.	6	156	a V
Freccia	Cant, Navale di Tirreno,	1931	,,	,,	,,	,,	,,	,,	,,	Α.Δ.	21-in.	oug	1
Euro	Sestri Levante Genoa	1927	3071	30	9.5	2	1073 1092	35,000	36	4 4·7-in., 3 M., 52 mines, 2 1·5-in, A.A.	6 21-in. (T.)	140	340
SUBMARINES— A, Cagni	Monfalcone	1940	285	25.5	17.9	2	Surf. Sub. 1461	4600	Surf. Sub. 18	2 3·9-in., 4 M.		A THE	Alle
A. Cagin	Montalcone	1940	200	20.0	112	2	_	_	8.9	A.A.	14 18-in.	li de	14
L. Torelli	La Spezia	1940	247	22.5	15.5	2	1036	3600	$\frac{18}{8.5}$	1 3.9-in., 4 M. A.A.	8 21-in.	60	U T
A. Bagnolini	Taranto	1939 1939	250		13.8	2	1030	3500	$\frac{18}{8.5}$	1 3.9 in., 4 M. A.A.	8 21-in.	60	-1.
R. Giuliani Dandolo	,, Adriatico	1939	239½	09.5	15.5	2	041	0000	17	0001-0-	0	ril etagr	Mark I
Dandolo	Adriatico	1990	2009	20.0	10.0	-	941	3000	8.5	2 3.9-in., 2 M. A.A.	8 21-in.	-83	32
Cappellini	Spexia	1939	238	23.5	15	2	950	3000	8.5	2 3.9-in., 4 M.	8 21-in.	52	iş.
Alagi	Adriatico	1936	19	21	14.4	2	844	$\frac{1350}{800}$	8.5	1 3.9-in., 2 m.	6 21-in.	40	
Aradam	,,	1936	,,	,,	,,	,,					21-111.	"	-
Beilul	Orlando	1938	,,	,,	,,	,,	"	,,	"	,,	,,	"	
Diaspro	Adriatico	1936	197	21	14-4	2	620 844	$\frac{1350}{800}$	$\frac{14}{8\cdot5}$	1 3·9-in., 2 M.	6 21-in.	40	
Turchese	,,	,,	,,	,,	,,	,,	200	1050	.,	,,	21-111.	**	
Onice	Orlando	1936	197	21	14.4	2	844	800	14 8·5	1 3·9-in., 2 M.	6 21-in.	40	
≜tropo ‡	Tosl	1937	2662	231	121	2	$\frac{1190}{1550}$	$\frac{2880}{1300}$	$\frac{17}{8}$	1 3.9-in., 2 M., 30 mines.	6 21-in,	60	
Zoea ‡	,,	"	"	,,	,,	"	1332	4400	17			"	
G. Finzi ‡	Spezia	1935	275	25.5	13.2	2	1965	1800	8.75	2 4·7-in., 4 M., 14 mines.	8 21-in.	90	

^{*} Many of these ships are under British control, including †.

‡ Minelayers.

* Lamonia, care,

Italy—continued.

		_	Dir	mensi	ons	rews	ent		_		pes	nt	
Name or number	Where built	Launched	Length (extreme)	Beam	Draught	Number of screws	Standard Displacement	Horse- power	Maxi- mum speed	Armament	Torpedo tubes	Complement	Fue
			Feet	Feet	Feet		Tons Surf Sub.		Knots Surf. Sub.				Ton
SUBMARINES—contd. Topazio	Fiume	1983	197	21	12	2	$\frac{590}{787}$	$\frac{1350}{800}$	14 8·5	1 3-9-in., 2 M.	6 21-in.		
Galatea	Monfalcone	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,		
Otaria †	Monfalcone	1934	240	231	141	2	$\frac{860}{1167}$	3000 1040	8.5	2 3.9-in., 2 M.	8 21-in.		
Squalo	Cantiere N.	1930	229	19	14.5	2	$\frac{810}{1077}$	$\frac{3000}{1400}$	$\frac{16.5}{9}$	1 4-in., 2 M.		64	
Jalea	Odero-Terni	1932	201.8	18.5	13	2	599 778	$\frac{1200}{800}$	14 8·5	1 4-in., 2 M. 21-in.	6 21-in.		
Ciro Menotti	Ansaldo	1929	229	19	15.5	2	$\frac{815}{1078}$	$\frac{3000}{1300}$	9	1 4-in., 2 M.	8 21-in.	50	
Fratelli Bandiera	Monfalcone	1929	,,	,,	,,	,,	,,	,,	"	,,	,,	,,	
Luciano Manara	,,	,,	,,	,,	,,	"	,,	,,	,,		,,	,,	
Luigi Settembrini	Taranto	1930	,,	,,	,,	"	$\frac{797}{1134}$	3000	,,	,,	,,	,,	
Ruggiero Settimo	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	
E. Fieramosca	Taranto (Tosi)	1929	277	27	16-8	2	$\frac{1340}{1760}$	2000	19 10	1 4·7-in., 4 M.	8 21-in.	66	80
M. Bragadino		1929	233	18.6	14	2	$\frac{802}{1051}$	1500	14 8	1 4-in., 2 M., 24 mines.	4 21 in.	50	41
F. Corridoni	,,	1930	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,
Ballila †	Spezia, Ansaldo	1927	287	25.6	13.5	2	$\frac{1368}{1874}$	$\frac{4400}{2200}$	18.5	1 4·7-in., 4 M. 16 mines.	6 21-in.	66	140
V. Pisani	Montfalcone, Trieste	1927	223	18-7	13.8	2	$\frac{791}{1040}$	3000 1000	9	1 4-in., 2 M.	6 21-in.	35	48
M. Colonna	,,	1927	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,
G. Bausan	,,	1928	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,
G. Mameli	Taranto	1926	212	21.5	13	2	$\frac{770}{994}$	$\frac{3000}{1000}$	17 9	14-іп., 2 м.	6 21-in.	35	48
T. Speri	,,	1928	,,	,,	,,	,,	,,	,,	,,	,,,	,,	,,	,,,
G. da Procida	,,	1928	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,
H 1, 2, 4	Vickers	1917	150.3	15.8	12	2	336 46	480	$\frac{13}{10}$	1 3-in. A.A., 1 M., H1, 4, and 6 only.	4 18-in.	22	18

Minelayers.

# Japan.

		ą.	Din	ensio	ons	crew	ent				tubes	ont	
Name or number	Where built	Launched	Length (extreme)	Beam	Draught	Number of screws	Displacement	Horse- power	Maxi- mum speed	Armament	Torpedo tu	Complement	Coal Oil
DESTROYERS : First Class—	11	7	Feet	Feet	Feet		Tons		Knots				Tons
Tanikase	Fujinagata	1939- 1940	360	33.3	9	2	1500- 2000	38,000	34	6 5-in.	2 24-in.		500
Amatsukaze Urakaze Nowake Yukikaze	Maizuru Fujinagata Maizuru Sasebo	"	"	"	"	" " "	"	"	" " " " "	" "	(Q.)	PLEA	72 79 79 79
Michishio	Fujinagata	1937-	356	33.3	9	2	1500	38,000	34	6 5-in.	2	200	500
Asagumo Kasumi Shiranuhi Isokaze	Kawasaki Uraga Uraga Sasebo	1938	"	"	"	" " " " " "	"	,, ,, ,,	", ", ",	)) ))	24-in. (Q.)	"	"
Harusame	Maizurn	1935- 1936	336	31.8	9.1	2	1368	37,000	34	5 5-in., 2 M.G.	2 21-in.	200	400
Samidare Murasame Shigure Shiratsuyu	Uraga Sasebo Uraga Sasebo	"	"	"	"	"	,,	"	" " "	"	(Q.)	"	" "
Hatsushima	Uraga	1933-	338	32.7	8.8	2	1368	37,000	34	5 5-in., 2 M.	2	200	400
Yugure Wakaba	Maizuru Sasebo	1934	,,1	"	,,	"	,,	"	"	,,	21-in. (T.)	"	,,
Hatsuhara	Sasebo	"	,,	"	"	,,	"	,,	"	"	"	"	"
Akebono Ushio	Fujinagata Uraga	1929- 1932		34	10.7	2	1700	40,000	34	5 5-in., 2 M.	3 21-in. (T.)	200	420
Hibiki Ikazuchi	Maizuru Uraga	"	"	"	"	"	"	"	"	"	"	"	"
Amagiri Shikinami Hatsuyuki Usugumo Uranami	Tokyo Maizuru Maizuru Ishikawa- jima (Tokyo) Sasebo	1930 1929 1928 —	371.5	34	10.7	2	1700	40,000	34	65-in., 2 M.	3 21-in. (T.)	197	420
Minadzuki	Uraga	1926	320	30	9.8	2	1315		34	4 4·7-in., 2 M.	2	148	_
Yudzuki Udzuki Satsuki	Fujinagata Ishikawajima Fujinagata	1927 1925 1925	b.p.	"	"	"	"	"	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Δ.Δ.	21-in. (T.)	,,	400
Yunagi	Sasebo	1924- 25	320 b.p.	30	9.6	2	1270	38,500	34	4 4·7·in., 2 M.	3 21-in,	148	400
Kamikaze Asakaze	Nagasaki	1922	",	"	",	"	"	"	"	"	(D.)	"	"
Matsukaze Hatakaze	Maidzura	1922- 24	"	"	"	,,	",	"	"	"	"	27	"
Asanagi Sawakaze	Fujinagata	1924	"	"	",	"	"	"	"	",	"	33	"
Shimakaze	Nagasaki	1919-		29.2	9.5	2	1215	38,500	34	4 4·7·in., 2 M.	3 21-in.	149	400
Yukaze Namikaze Nokaze Shiokaze Hokaze	Maidzuru Mitsubishi, Kawasaki	" 1920– 22	' ',	,, ,, ,,	,, ,,	"	"	,, ,, ,,	"	" "	(D.)	"	" "
Akikaze	Maidzuru	,,	,,	,,	"	,,	",	",	,,	",	",	"	73
Second Class— Wakatake	Kawasaki, Kobe	1922	275 b.p.	26.5	8.3	2	820	21,500	31.5	3 4·7-in., 2 M.	2 21-in,	110	
Kuretake	,,	,,	,,	,,	"	,,	,,	,,	,,	,,,	(D.)	,,	23
Fuyo Karukaya Sanaye	Fujinagata Uraga''	1922- 23 1923	275	"	"	"	"	"	"	"	"	"	"
Momo	Sasebo		275·0 b.p.	25.8			755	16,000	31.5	3 4·7-in., 2 M.	2 18-in. (T.)	109	oo

### Japan—continued.

,			Dir	nensi	ons	rews	int	a l			sec	nt	Fuel
Name or number	Where built	Launched	Length (extreme)	Beam	Draught	Number of screws	Displacement	Horse- power	Maxi- mum speed	Armament	Torpedo tubes	Complement	Coal
DESTROYERS—contd. First Class—contd. Kaki	Kawasaki	1917-	Feet 275.5 b.p.	1	Feet 8	2	Tons 770	21,500	Knots 31·5	3 4·7 in., 2 M.	2 21-in,	80	Tons
Kuri	Kure	,,	100	,,	311	"	. ,,	C	. ,,	tarities after	(D.)	10.1	bi (
Nire, Tsuga	Ishikawajima	,,	,,	"	,,	,,	,,	,,	,,	"	"	,,	,,
Sumire Hishi, Hasu Fuji Ashi Take Kaya	Ishikawajima Uraga Fujinagata Kawasaki Kobe Yokosuka	1920- 1922 "	275·5 b.p.	26	.8	2 ", ", ", ", ", ", ", ", ", ", ", ", ",	770	21,500	31.5	3 4·7 in., 2 m. A.A.	2 21-in. (D.)	80	
Torpedo Boats— Chidori	Maizuru	1933	254	24	6	2	527	7000	26	3 4·7-in.	2 21-in.		L1)
Manazuru	Fujinagata	"	"	"	.,,	"	,,	"	**	,,	,,	111	
*Tomazuru	Maizuru	"	,,	,,,,	,,	,,	,,	. "	***	,,	,,	22.7	(-1)
Hatsukari	Fujinagata	,,	,,	"	"	,,	,,	,,	**	,,	,,	1 0	
†Yamasemi	Schichau	1912	196	21	9	2	390		20	23-in., 11.85-	3	41	18
‡Kawasemi	Kawasaki	1908	135	151	7.2	1	96	1200	23	in., 1 1.5-in.	14-in.		
Otori Hiyodori Hayabusa Kari Sagi Hato Kiji	Maizuru Ishikawajima Yokohama Mitsubishi Harima Ishikawajima Mitsui Tama	1935	263	26	64	2 ", ", ", ", ", ", ", ", ", ", ", ", ",	595	9000	28	3 4·7-in., 1 M.G.	3 21-in. ",		
4.5				r i									
SUBMARINES-							Surf. Sub.	-	Surf. Sub.			718	n III
I168 ex I68	Kure	1933	331	27	13	2	1400	6000	20	1 3·9-in.	6	60	
I169 ex I69	Kobe	1934	"	,,	,,	,,	,,	,,	,,	,,	21-in.	,,	
I171 ex I71	Kawasaki												
I172 ex I72	Mitsubishi	1935	"	,,	"	,,	,,	,,	"	1 4·7-in.	6 21-in.	60	
I174 ex I74 and I175 ex I75	Sasebo Mitsubishi	1936	,,	"	,,	,,	,,	,,	"	,,	,,	,,	
19–116		1939	344	29-9	14-4	2	$\frac{1950}{2600}$	6000	17_	2 5·5-in.	4 21-in.	60	
126-134		1940	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	
18	Kawasaki	1935	344			2	1950 2500	6000 1800	17 9	2 5·5-in.	4 21-in.	60	
16	,,	1934	320	30	15.7	2	$\frac{1900}{2500}$	6000 1800	$\frac{17}{9}$	1 5-in., 1 sea- plane.	6 21-in,	60	
15	.,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	
I165 ex I65	Kure	1931		26.9		2	1638 2100	1800	19 9	1 4-іп., 1 м.	6 21-in.	70	
I166 ex I66	Sasebo	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	

Capsized in 1934 but has been repaired and put into commission again,
 ‡ ex-Chinese Hu Ngo.

[†] ex-Chinese Chien Kang.

# Japan-continued.

		-	Din	nensi	ons	Crew	ent	Cl	-	-	bes	nt	Fue
Name or number	Where built	Launched	Length (extreme)	Beam	Draught	Number of screws	Displacement	Horse- power	Maxi- mum speed	Armament	Torpedo tubes	Complement	Coa
SUBMARINES—contd.	4.70	n il	Feet	Feet	Feet	no L	Tons Surf.	-	Knots Surf.	.3	lneo-El	a You	Ton
	5 m 12 h 17	Sec.	7,14	111	- 1		Sub.	120	Sub.	Kawasast	3	13	400
I162 ex I62	Kobe	1928	3201	25.7	16	2	1635 2100	$\frac{6000}{1800}$	21 7.9	1 4·7-in.	6 21-in,	56	250
164	Kure	1929	,,	,,	,,	,,	,,	,,	,,	,,	,,	"	11
14	Kawasaki	1929	320	30.2	15.7	2	1955 2480	6800 1800	17	2 5·5-in., 1 M.	6 21-in.	61	520
12	,,	1926	"	,,	,,	"	,,	,,	***	Fullmagara Kananat	"	22	13
†I121 ex I21	,,	1927	2791	24.6	14	2	$\frac{1142}{1470}$	$\frac{2400}{1200}$	9.5	1 5.5-in.	4 21-in.	45	豆
†I122 ex I22	,,	1928	,,	,,	,,	,,	,,	,,	,,	"	,,	,,,	ACC
†I123 ex I23	,,	1928	,,	,,	,,	,,	,,	,,	,,	,,	My.01	22	Live
†1124 ex 124	,,	,,	,,	,,	,,	,,	,,	,,	,,	Marie Land		1101	(47)
I152 ex I52	Kure	1935	3311	26	16	2	1635 2100	$\frac{6000}{1800}$	$\frac{21}{7-9}$	1 4·7-in.	8 21-in,	56	25
I153 ex I53	,,	1927	,,	,,	,,	,,	,,	,,	,,	and the Maria	,,	175.07	33
I155 ex I55	"	1927	,,,	,,	,,	,,	,,	,,	,,	a tarana Mari	"	. 22	. 22
I156 ex I56	G 1,	1929	"	,,	"	,,	,,	,,	,,	ale mediciti	**	11	33
I154 ex I54 I163 ex I63	Sasebo	1927 1928	,,	"	"	,,	- "	, ,,	, ,,	***	**	32	23
I160 ex 160	"	1929	,,	,,	"	,,	,,	,,	,,	,,	**	33	23
I159 ex I59	Yokosuka	1929	",	"	"	"	"	"	"		"	"	23
I158 ex I58		1928	,,	,,	,,	,,	"	"	,,		"	23	99
I157 ex I57	Kure "	1929	"	,,	,,	,,	"	",	,,	(!!.)/	,,,	1	77
Ro. 34	Mitsubishi	1935	239	22	10.5	2	700	1200	16	1 3-15-in, A.A.	4 21-in.	uda	NA.
Ro. 60–68	,,	1924- 26	250	24.2	12.4	2	988 1300	2400 1800	16	1 3·15-in, A.A., 1 M.	6 21-in.	47	75
Ro. 57	Kure	1923	250	23.5	13	2	889 1082		17 10·5	1 3·15-in., 1 3- pr.	4 21-in.	65	76
Ro. 58, 59	Yokosuka	1922	,,	,,	,,	,,	,,	,,	,,	,,	"	,,	,,
Midget Class		1	75									NIN	100

[†] A class of newly constructed submarines, fitted for store carrying, has been reported.

### Netherlands

		-	Dir	nensi	ons	rew	ent				bes	int	Fue
Name or number	Where built	Launched	Length (extreme)	Beam	Draught	Number of screws	Displacement	Horse- power	Maxi- mum speed	Armament	Torpedo tubes	Complement	Coa
Jan van Galen, ex-H.M.S. Noble	Denny Bros.	1941	Feet	Feet	Feet	Managh	Tons	DR.A. L	Knots	6 4·7-in.	5 21-in.	1 202	Ton
1ST CLASS TORPEDO BOATS— G16	Fijenoord	1914	162-5	17:3	9-0	1	150	2600	25	2 3-in.	3 17·7-in.	27	40
Z 3	Amsterdam	1917	201	20-4	6	2	277	5500	27	2 3-іп., 2 м	17·7 in.	48	61 8
Z 5-8	Scheldt Fijenoord	1915	192	19.8	5.5	2	264	5500	27	2 3-іп., 2 м.	4 17·7-in.	48	70
SUBMARINES— Zwaardvisch ex-H.M.S. Talent	Vickers	1943	265	27.5	12	2	Surf. Sub. 1090 1575	2500 1450	15½ 9	1 4-in.	6	53	inet kui
Dolfijn ex-H.M.S. P.47	Vickers	1942	180	16-1	12.9	2	$\frac{540}{730}$	615 825	$\frac{11\frac{1}{4}}{10}$	1 3-in.	4	27	si. e
Zeehond, ex-H.M.S. Sturgeon	Chatham	1932	203	24	10.5	2	960	1550 1300	131 10	1 3-in.	6	40	211
K XIV	Rotterdam	1932-	242	21.5	12.5	2	$\frac{770}{1030}$	$\frac{3200}{1000}$	17	1 3·5-in., 2 2- pr.	8 21-in.	35	thei
K XV	,,	,,	,,	,,	,,	,,	966	5000	,, 17	,,	,,	"	
O 19	,,	1938	265	24.6	12.5	2	1020	5000	9	1 3·5-in., 2 1·5- in.	8 21-in.	36	
o xxi	De Schelde	1939	2541	251	13	2	888 1205	5000	20	1 3·5-in.	8 21-in.	37	oil
O 23 O 24	Rotterdam	1931	,,	,,	,,	,,		"	,,	,,	,,	,,	,,
O 24 O 25	"	1924 1940	"	"	"	,,	,,,	,,	,,	,,	,,,	"	"
0 26	,,	1940	"	"	"	"	"	,,,	,,	",	"	33	11 99
O 27	Wilton'	1940	,,	,,	,,,	"	"	, ,,	. ,,	,,	"	"	"
O 12	Fijenoord De Schelde	1930	199	18.7	11.5	2	560 700	1900 600	15 8	2 1·5-in. A.A.	5 21-in.	31	E.
O 15	,,	1931	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	
K XI	Fijencord	1924	218-8	20.2	12-2	2	810	725	$\frac{15}{8}$	1 3.5-in., 1 maxim.	6 17·7-in.	31	45
O 10	Amsterdam	1925	1791	18-7	111	2	506 627	900	$\frac{12\frac{3}{4}}{9}$	1 22-pr. A.A., 1 maxim.	5 21-in.	29	21
0 9, 0 11	Flushing	,,	,,	,,	"	,,	,,	"	,,	,,	"	"	-,,
O 8, ex-H.M.S. H.6		1917	147	16	10	2	364 440	480 320	12 8	1 1·5-in.	4	26	

# Norway.

		_	Din	nensi	ons	crews	ent		Maxi-		pes	ant	Fuel
Name or number	Where built	Launched	Length (extreme)	Beam	Draught	Number of screws	Displacement	Horse- power	mum trial speed	Armament	Torpedo tubes	Complement	Coal
DESTROYERS— 2 Destroyers	Horten	Bldg.	Feet 319	Feet 32·9	Feet 8.9	2	Tons 1220	30,000	Knots 34	4 4·7-in., 2 1·57-in.	4 21-in.	120	Tons
Draug Two Destroyers	Horten ex-British	1908- 13	226	23.5	8.8	2	540	7500	27.0	63-in., Draug has 6 4-7-in. in addition.	3 18-in.	71	95
TORPEDO BOATS: First Class— Snogg	Horten	1919- 1920	173-9	18	51	2	250	3500	25	2 3-in,	4	31	30
Brand		1920	130-9	16.0	6.9	1	100	1100	21	2 м.	18-in.	19	17
Laks	"	1900	126.4	100	6.9	1	100	1150	21.8	2 M.	18-in.	19	12
Sild	"	,,	,,	,,	,,	,,					18-in.		,,
Sleipner	"	1936	236-3		6.9	2	625	12,500	30	3 4-in., 1 1·5-	2	72	-
Gyller	,,	,,	,,	,,		-				in. A.A.	21-in.		100
Odin, Balder, Tor	Fredrikstad	1939	,,	,,	"	"	"	,,	,,	,,	"	45	
Second Class— Schildkote ex-Kjek, Seesetm ex-Hvas	Fredrikstad	1898	114.5	14.5	6.0	1	73	650- 750	19-20	2 м.	2 18-in.	14	11
Krokodil ex-Hauk, Falke ex-Falk	Horten	1903	,,	,,	,,	,,	,,	,,	,,	,,	"	"	"
Skarv, Teist	,,	1906-7	133	14.5	6.5	1	100	1600	25	2 3-pr.	,,	18	16
Eidechse ex-Lom		,,	117	14.5	5.7	1	72	1100	23	2 M.	,,	16	15
Schlange ex-Orn	,,	1903	113	14.5	5.7	1	73	850	23	2 M.	,,	,,	,,
Kjell	,,	1912	135	14.9	6.4	1	100	1800	25	2 3-pr.	,,	19	"
SUBMARINES— B 1	Horten	1922	167-8	17.5	10.5	2	413 545	900 640	14.5	1 3-in.	4 18-in,	23	<u>-</u>
Two Submarines	ex-British Unity Class	1943	180	16-1	12.9	2	$\frac{540}{730}$	615 825	111	1 3-in.	4	27	( II

# Soviet Union. Some of the details given below are uncertain.

### screws Dimensions tubes Displacement Complement Launched Fuel Horse-Number of Length (extreme) Name or number Where built signed Armament Torpedo Draught Beam power Oil speed FLOTILLA LEADERS-Feet Feet Feet Knots Tons Tons Leningrad Leningrad 1935 400 1950 5 5·1-in., 2 3-21-in. in. A.A. Minsk 1936 Vladivostok Ordzhonikidze 1936 ,, ,, 1937 DESTROYERS-Boiki 1938 2 1600 50,000 38 4 5·1 in., 2 1·5 R 21-in. Gromki 1940 A.A. ,, 22 ,, ,, Grozni ,, ,, Gremyashchi Grozyashchi ,, ,, ,, ,, ,, ,, Besposhtchadni ,, ,, 33 ,, ,, 4 4-in., 1 3-in. A.A., 2 M., 80 mines. Karl Liebknecht Uritsky Leningrad 1914 321 31 9.25 2 1610 32,000 29 9 110 400 18-in 1914 321 ,, ,, 22 ,, 22 " ,, ** ,,, (T.) Stalin 1914 315 31 10 2 1260 30,000 28 Voikov 15 ,, ,, ,, ,, ,, ** ,, ,, ,, ,, Shtorm Nikolaev 1932 236 24 10 2 700 13,200 29 2 4-in., 3 3-in., 2 M., 40 mines 72 Shkval 18-in. ,, ,, .. ,, ,, ,, .. 24-in., 33-in., 2 M., 40 mines Groza Leningrad 1933-236 24 10 2 700 13,200 29 72 Metali 18-in. 35 ,, ,, Smertsch ,, ,, ,, ,, ,, ,, ,, ,, ,, Uragan ,, ,, ,, ,, ,, ,, ,, ,, Vyuga ,, 99 Grom ,, ,, ,, ,, ,, ,, Vikhr ,, ,, ,, ,, ,, ,, ,, 11 ,, ,, ,, Tucha ,, ,, ,, ,, 23 Molniya Zarnitza ,, ,, ,, ,, ,, ,, ,, ,, ,, GUARD SHIPS-2 4-in., 4 1.5-Dserschinski Ansaldo 1934 250 27 9 3 800 5400 20 120 44 in. Kirov Surf. Surf Sub. Sub. SUBMARINES-1039 1930 1 4-in., 1 M.G. Chartist 1335 21-in. 33 Garlbaldiets ,, Karbonari 2500 15 869 1 4-in., 1 1·5-in., 1 M. Dekabrist. 1931 23 137 2 44 78 240 1318 1200 8 21-in. Narodovoleets ,, .. Krasnogvardeets Komsomolka ,, ,, ,, ,, ,, ,, " ,, ,, ,, ,, ,, ,, ,, ,, ,, ,, ,, Jacobinets ,, ,, ,, ,, ,, Revolusioner ,, ,, ,, ,, ,, ,, ,, ,, ,, ,, Spartakovets 12 others ,, ,, 11 ,, ,, ,, ,, ,, 1936 ,, 200 13 1935 1 1.5-in. 2 About 100 Type M 150 8 18-in. 41 500 1 1.5-in. About 100 Type 200 Schtsch 21-in. About 20 Type "S" 1938-1 3-in. 21-in. 40

A number of British Town Class destroyers have been transferred to U.S.S.B. A number of old Torpedo Boats are used as guard ships.

### BRASSEY'S NAVAL ANNUAL.

# Soviet Union—continued.

		marry		nensi		rews	ant	hdt W			pes	nt	
Name or number	Where built	Launched	Length (extreme)	Beam	Draught	Number of screws	Displacement	Horse- power	De- signed speed	Armament	Torpedo tubes	Complement	Fue
GUBMARINES—contd. About 20 Prayda	100 / 100 x 200 100 / 100 x 200	1936-	Feet	Feet	Feet		Tons Surf. Sub. 1200		Knots Surf. Sub.	2 4-in., 2 m.	8		Ton
and improved Pravda Classes		40					1800	. 56		2 4-m., 2 A.	21-in.		0
Komissar	St. Petersburg	1916- 17	223	142	12.6	2	790	900	$\frac{16}{9}$	2 6-pr., 1 M.G.	4 18-in.	33	40
Kommunar	,,	,,	,,	,,,	,,	**	,,,	,,	"	,,	,,	**	,,
Tovarisnch	"	53	,,	,,	,,	,,	"	,,	,,	**	,,	22	33
Krasnoarmeets	,,	,,	22	,,,	,,	"	"	"	"	,,	1)	77	77
Krasnoflotets	,,	,,,	>>	"	. >>	,,	"	17	23	,,	,,,	22	20
Bednyak	,,	"	,,	,,,	37	,,	"	22	,,	,,	***		99
Proletarii	,,	,,	,,	,,	"	,,	,,,	29	1)	,,	and rath	21	22
Batrak	11	**	,,,	,,	,,	,,	**	,,,	**	,,	17	"	21
Rabochi	"	**	19	,,,	11	99	"	11	"	,,	35	37	22
Aktivist	"	11	22	"	"	,,	"	"	**	"	,,	"	99
Politruk	31	19	33	"	"	99	22	"	27	,,	1 11	22	>1
Internationalist	22	**	"	12	"	22	23	"	**	"	**	22	99
Partizan	1)	11	"	>>	"	,,,	22	,,,	"	,,	,,	23	27
About 25 Type " C "	**	1930- 35								1 4-in.			14
L55 (ex-British)	***	1917	230	24	13	2	$\frac{870}{1139}$	$\frac{2400}{1600}$	$\frac{17}{10}$	1 4-in., 1 m.G.	6 21-in.	28	78
*Lembit	Vickers	1937	190	241	11	2	820	1200 700	$\frac{13\frac{1}{2}}{8\frac{1}{2}}$	1 1.57-in., 20 mines.	4 21-in.	40	NA STATE
*Kalev	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	"	.,
4 in No.	ex-British	1936- 40				2						1/57	17

[•] ex-Estonian.

# Spain

		70	Dir	nensi	ons	crews	ent		Maxi-		bes	ant	Fue
Name or number	Where built	Launched	Length (extreme)	Beam	Draught	Number of screws	Displacement	Horse- power	mum trial speed	Armament	Torpedo tubes	Complement	Coa
Danama	i ni		Feet	Feet	Feet		Tons	No.	Knots			LILL O	Ton
DESTROYERS— Gravina	Cartagena	1931	333	31.7	10-5	2	1536	42,000	36	5 4-in., 1 3-in.	6	175	-
Escano	"	1932	"	,,	,,	,,	,,	"	"	A.A., 4 M.	21-in.	1.0	540
Ciscar	,,	1933	,,,	,,	,,	"	,,	"	,,	"	(T.)	22	,,,
Jorge Juan	"	,,	,,	,,	"	,,	"	"	"	"	"	"	"
Ulloa	***	1 22	,,,	,,,	,,	,,	>>	"	,,	93	,,	153	33
Almirante Valdés	"	1930	,,,	"	,,	,,	,,,	>>	,,	***	"	, ,,	23
Almirante Ante-	"	"	"	,,	,,	,,	>>	,,	. **		**	2.5	"
quera		1001								1000	1	Will	116
Almirante Miranda	"	1931	"	,,	17	,,	,,	**	11	***	"	22	,,
Churruca Alcala Galiano	***	1929 1930	"	33	"	"	**	"	***	"	"	"	"
Lepanto	**	1928	"	"	"	,,	"	"	"	"	"	22	11
José Luis Diez	"	1920	"	22	,,	,,	,,	**	11	33	"	"	**
Sanchez-Barcaizte-	"	1926	"	,,	12	"	"	>>	**	,,,	,,,	23	-33
gui	"	2020	,,,	,,	",	,,	"	"	"	"	"	"	"
Juan Lazaga	.,	1924	283	27	9	2	1044	33,000	34	3 4-in., 2 1·85- in. A.A.	2 21-in.	70	265
Valeseo	19.	1923	"	,,	"	,,	,,	**	"		(D.)		100
Alsedo	,,	1922	,,	,,	,,	,,	,,	,,	**	,,		,,	,,
Velasco Geuta	Naples	1920	310	31	10	2	1706	60,000	34	4 4·7-in., 2 3-	2	139	-
Velasco Melilla	2.2									in., 2 M.	17·7-in. (D.)	100	260
velasco mellia	,,	,,	"	"	"	"	"	,,	,,		(D.)	"	
Huesca	Ansaldo	1915	170	26	8	2	850	20,000	32	5 4-in., 2 1.57- in. A.A., 2 M.	2 17·7-in.	99	250
Teruel	,,	,,	,,	22	,,	,,	,,	,,	,,	Ш. А.А., 2 М.	(D)		200
TORPEDO BOATS-								. 1				-	
T 7, 14, 17	Cartagena	1913-	164	16.5	61	3	187	3750	26	3 1·4-in.	3 18-in.	31	33
		22					0		0		10-III.	HIM	10000
			1				Surf. Sub.		Surf.				
							Sub.		Sub.				
D1, 2, 3	,,	1944	276	21.8	13	2	$\frac{1050}{1375}$	5000 1350	9.5	1 4·7-in., 4 M.	6 21-in.	(2-9)	1
				-			900	2000	16		21-m,		1
C 2, 4	"	1928- 29	247	20.8	13.5	2	1270	750	8.5	1 3-in, A.A.	6 21-in.	40	200
Isaac Peral (ex-C 1)	,,	,,,	,,,	,,	,,	,,	,,	**	,,	arterial in the	,,	,,	,,
B 2		1921-	210	10.0	11.25	2	560	1400	16	1 3-in, A.A.	4	28	
D Z	"	24	210	19.9	11.20	2	830	850	10.5	1 3-III. A.A.	18-in.	28	66
Conseal Wole	Towarto	1001	001 -	00.	10	0	880	3000	17	0001-0	0	40	100
General Mola	Taranto	1934	231.5	22.5	13	2	1230	1300	8.5	23.9-in., 2 M.G.	8 21-in.	48	150
								1000			21-111.		100
General Sanjurjo											1	9.71	pla
a creating to the lateral or late	"	11	21	. 33	22	2.2	23	**	23	"	"	99	**

### Sweden.

		-	Din	nensio	ns	rew	ant				pes	nt	Fue
Name or number	Where built	Launched	Length (extreme)	Beam	Draught	Number of screws	Displacement	Horse- power	Maxi- mum trial speed	Armament	Torpedo tubes	Complement	Cos
DESTROYERS— Mode ‡	Gothenburg	1942	Feet 243	Feet 26·4	Feet 9.5	2	Tons 635		Knots	3 4-in.	3	-	To
Magne Munin ‡ Mjolner ‡	,,	"	"	"	"	"	"		03.1	"	21-in,		
Gavle	,,	1940	304	29.5	12.5	2	2.30	32,000	39	3 4·7-in., 4 1-in.	6	131	=
Norrkoping Karlskrona	Karlskrona	1939	,,	"	"	"	**	"	**	"	21-in.		13
Stockholm	The state of the s	1936	"	"	"	"	"	"	"	"	",	**	22
Malmo Goteborg	Goteborg	1938 1935	"	"	"	"	"	"	"	"	"	"	,,
Klas Horn	Malmo	1931	304.2	29.2	10.5	2		24,000	35	3 4·7-in., 2 2-	2 trpl.	125	-
Klas Uggla	Karlskrona		,,	,,	,,	,,	,,	26,000	,,,	рг. А.А., 2 м.	21-in.	**	13
Ehrensköld	Göteborg Malmö	1926	,,	,,	,,	,,	"	"	**	**	"	**	27
Nordenskjold		,,	"	"	"	"	"	,,	,,	,,	"	**	11
Ragnar ‡	Malmö	1909	216	20.8	9	2	354	8000-	30.0	4 3-in. 2 M.	2	67	80
Sigurd Vidar	Gothenburg Malmö	"	"	"	,,	"	"	9000	**	,,	18-in. (D.)	n	1
Hugin	Gothenburg	"	"	"	"	"	"	,,	"	"	"	33	n
					9.2		15.00		100000			100	1
Wrangel ‡ Wachtmeister	"	1917	232.8	22	9.2	2 ,,	458	11,000	34.0	4 3-in., 2 M.	6 18-in,	72	-
†Puke (ex-Ricasoli)	Naples	1926	278-6	28.2	8.7	2	935	36,000	35	4 4·7-in., 2 1·5-	4	106	-
†Psilander (ex-Nicotera)	"	"	"	"	"	,,	"	"	,,	in. A.A., 2 M., 40 mines.	21-in.	"	2
†Romulus (ex-Spica)	**	1934	263-6	26.9	7.4	2	638	19,000	34	3 3·9-in., 6 1·5- in. A.A.	4 17·7-in.	111	1
Remus	,,	,,	,,,	,,	,,	**	,,,	"	,,	"	**		1
(ex-Astore) 4 in Number	Gothenburg	Bldg.					1000		39	3 4·7-in,			
	100						Surf.		Surf.			1	L
UBMARINES-							Sub.		Sub.				
1st Class— Dykaren	Kockum	1941	204	20.5	11	2	530	2000	15	14-in., 2 M.	6		
Sjoborren	Kockum "	1041	11	20'0	,,	,,	760	-	10	1 4-III., 2 M.	21-in.	177	1
Sjohasten	"	**	,,	"	,,	"	,,	,,,	,,,	,,	,,	**	١,
Sjoormen Svardfisken	"	"	"	"	"	"	"	"	"	,,	"	**	1
Tomlaven	",		"	"	"	"	"	"	"	"	"	"	1
						"	700	2800	16		1	11/1/20	-
Draken	Naval Yard, Karlskrona	1926	213	21	10.8		850	-	9	1 4-in., 1 M.	20-in.	32	4
Gripen	"	1928	,,	33	"		"	,,,	"	,,	,,	**	
Bavern	"	1921	185	18.5	9.2		$\frac{500}{650}$	2800	$\frac{15}{9}$	1 3-in., 1 M.	4 18-in.	1	3
Uttern	Karlskrona	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	113	1
Valen ‡	,,	1925	186	23.2	9.4		$\frac{492}{650}$		15	1 3-in., 1 M.	4 18-in.		1 00
Nordkaparen	Kockum	1935	199	203	11	2	500		15	1 4-in.	4	28	
Delfinen	Nockum "	,,	100	,,	,,	,,	720		10	1 4-111.	21-in.	111	1
Springaren	,,	,,	"	,,	,,	,,	"	,,	***	"	"	"	
Sjolejonet	,,	"	",	77	"	,,,	11	11	"	,,		"	1
Sjobjornen	,,	1936	201	206	11	2	620		15	1 4-in., 2 M.G.	4	32	-
Sjohunden	.,	-42	,,	,,	,,	,,	-		10	,,	21-in.	"	
Nackan Najad	**	,,	"	"	"	"	"	**	,,	"	**	**	
Neptun	,,	"	"	"	,,	"	"	"	",	,,	"	37	
U1, U2	,,	1941-		1		1		1	1			-	
		42											
U3	Karlskrona	1942					367	1					1
	,,	1938	1		1	1	501	1	1	1	1	1	1

† Ex-Italian.

‡ Fitted[for minelaying.

### United States.

		р	Din	nensi	ons	crew	1 ent				pes	nt	
Name or number	Where built	Completed	Length (extreme)	Beam	Draught	Number of screws	Standard Displacement	Horse- power	Maxi- mum specd	Armament	Torpedo tubes	Complement	Fuel
DESTROYERS— Sumner Class— Allen M, Sumner Ault Barton Blue Brush Chas. S. Sperry Collett Cooper De Haven English Hank Harry E. Hubbard Haynsworth Hyman Ingraham John W. Weeks Laffey Lowry Lyman K. Swenson Maddox Mansfeld Mannert L. Abele Moale O'Brien Purdey Samuel L. Moore Taussig Walke		1944	Feet	Feet	Feet	2	Tons		Knots	- 5-in.	21-in.	The second secon	Tons
Fletcher Class— Abbot Abner Read Albert W. Grant Ammen Anthony Aulick Bache Beale Bearss Bell Benham Bennett Bennion Black Boyd Bradford Braine Brown Bryant Bullard Burns Bush Callaghan Caperton Capps Cassin Young Charette Charles F. Ausburne Charles J. Badger Chauncey Clarence K, Bronson Claxton Cogswell Colahen Colohoun Conner Conner Conner Conner Cony Cotten Cowell Cushing Daly Dortch Dashiell	Bath Bethlehem Charleston Bethlehem Bath Orange Bethlehem Gulf Charleston Boston Boston Boston Boston Boston Federal Bethlehem Bethlehem Bethlehem Bethlehem Bethlehem Bethlehem Bethlehem Bethlehem Bethlehem Bath Bethlehem Bath Bethlehem Bath Bethlehem Bath Bethlehem Boston Orange Bethlehem Boston Bath Bethlehem Federal Federal Seattle Bath Bethlehem	→ 1943- 44				2				- 5-in.	21-in.		

		p	Din	nensi	ons	rews	ut				sec	nt	
Name or number	Where built	Completed	Length (extreme)	Beam	Draught	Number of screws	Standard displacement	Horse- power	Maxi- mum speed	Armament	Torpedo tubes	Complement	Fu
Destroyers—contd. Fletcher Class—contd. David W. Taylor Erben Erben Erben Erben Fletcher Foote Franks Fletcher Foote Franks Fletcher Foote Franks Fullam Gatling Gregory Guest Haggard Halley Halle Hallgan Halley Halle Halligan Hallsey Powell Haraden Harrison Hazelwood Healy Heerman Heywood L. Edwards Hickox Hoel Hopewell Howarth Hudson Hunt Hutchins Ingersoll Irwin Ingersoll Irwin Isherwood Izard Jarvis Jenkins John D. Henley John Hood John Rodgers Johnston Kidd Killen Kimberly Knapp La Vallette Laws Johnshon Kidd Killen Kimberly Knapp La Vallette Laws Leutze Lewis Hancock Little Longshaw Luce Marshall McCord McDermut McGowan McKee McDermut McGowan McKee McDermut McGowan Mortison	Gulf Seattle Federal Bath Gulf Bath Gulf Bath Federal Boston Federal Seattle Boston Seattle Boston Boston Boston Boston Boston Bethlehem Boston Federal Bethlehem Boston Federal Bethlehem Boston Federal Bethlehem Boston Federal Bethlehem Federal Bethlehem Federal Boston Bath Boston Federal Boston Federal Boston Federal Boston Federal Boston Bath Boston Boston Boston Boston Federal Boston Federal Boston Federal Boston B	1943-44	Feet	Feet	Feet	2	Tons		Knots	- 5-in.			To the second se

		p	Din	nensio	ons	crew	dent	8	3		pes	int	
Name or number	Where built	Completed	Length (extreme)	Beam	Draught	Number of screws	Standard Displacement	Horse- power	Maxi- mum speed	Armament	Torpedo tubes	Complement	Fuel
DESTROYERS—contd. Fletcher Class—contd. Fletcher Class—contd. Preston Prichett Pringle Radford Remey Renshaw Richard P. Leary Ringgold Robinson Ross Rowe Saufley Schroeder Sigourney Sigsbee Smalley Spence Sproston Stanly Stembel Stephen Potter Stevens Stockham Stoddard Taylor Terry Thatcher The Sullivans Tingey Trathen Twiggs Twining Unlman Van Valkenburgh Wadleigh Wadsworth Walker Watts Wedderburn Wickes William D. Porter Wren Yarnall Young	Bethlehem Seattle Charleston Boston Bath Federal Boston Federal Seattle Seattle Seattle Seattle Federal Bath Federal Bath Federal Bath Federal Boston Charleston Bath Bethlehem Boston Bethlehem Bath Federal	1943- 44	Feet	Feet	Feet	2	Tons		Knots	In the second se	21-in.	COMMENTAL COMMEN	· 经股份的 · · · · · · · · · · · · · · · · · · ·
Somers Class— Davis Jouett Sampson Somers	Bath Bath Bath Federal	1938- 39	381	361	101	2	1850	50,000	35	6 5-in., 6 1·5- in.	8 21-in.		Armai Armai Armai
Selfridge Class— Balch Clark McDougall Moffett Phelps Selfridge Winslow	Bethlehem Bethlehem New York Bethlehem Bethlehem Bethlehem New York	1936– 37	381	361	101	2	1850	50,000	35	6 5-in., 8 1·5- in.	8 21-in.	THE STATE OF THE S	
Bristol Class— Bailey Baldwin Bancroft Boyle Buehanan Butler Cafdwell Carmick Champlin Coghlan Cowie Davison Doran Doyle Earle	Bethlehem Seattle Bethlehem Bethlehem Federal Philadelphia Bethlehem Seattle Bethlehem Boston Federal Boston Seattle Boston Seattle	1942– 43	348	36	10	2	1700	50,000	351	4 5-in., 4 1-5-in.	5 21-in.	skou) in four these of the of these of the of	TAN MARKET STATE OF THE STATE O

		P	Din	nensi	ons	Srews	dent	(c			pes	sut	11
Name or number	Where built	Completed	Length (extreme)	Beam	Draught	Number of screws	Standard Displacement	Horse- power	Maxi- mum speed	Armament	Torpedo tubes	Complement	Fue
DESTROYERS—contd. Bristol Class—contd. Edwards Ellyson Emmons Endicott Farenholt Fitch Forrest Frankford Frazler Gansevoort Gherardi Gillespie Hambleton Harding Herndon Hobby Hobson Jeffers Kalk Kendrick Knight Lansdowne Lardner Laub Macomb MacKenzle McCalla McCook McLanahan Meade Mervine Murray Nelson Nields Ordronaux Parker Quick Rodman Satterlee Shubrick Stevenson Stockton Thorn Tillman Wells Woodworth	Federal Federal Bath Seattle Bethlehem Boston Boston Boston Boston Boston Bethlehem Bethlehem Philadelphia Bethlehem Federal Bethlehem Charleston Federal Bethlehem Bethlehem Bethlehem Boston Federal Bethlehem Bethlehem Boston Federal Bethlehem Bethlehem Bethlehem Bethlehem Federal Bethlehem Federal Seattle Seattle Seattle Seattle Seattle Bethlehem Federal Bethlehem Federal Federal Federal Seattle Norfolk Federal Federal Federal Seattle Norfolk Federal Seattle	1942-43	Feet 348	Feet.	Feet 10	2	Tons 1700	50,000	Knots	4 5-in., 4 1-5-in.	5 21-in,	The control of the co	Tons
Benson Class— Benson Charles F. Hughes Eberle Edison Ericson Gleaves Grayson Hilary P. Jones Kearny Livermore Ludlow Madison Mayo Niblack Nicholson Plunkett Swanson Wilkes Woolsey	Bethlehem Puget Bath Federal Boston Bath Charleston Charleston Federal Bath Boston Boston Bethlehem Bath Charleston Bothlehem Bath Charleston Federal Charleston Federal Charleston Boston Boston Bath	1940-41	348	35₹	10	2	1630	50,000	351	4 5-in., 6 1·5- in.	5 21-in.		STATES SERVICES AND ADDRESS.
Anderson Class— Anderson Hughes Morris Mustin Roe Russell Wainwright	Federal Federal Norfolk Federal Charleston Newport Norfolk	1939– 40	348	35 <u>1</u>	10	2	1570	50,000	36	4 5-in., 4 1·5 in.	8 21-in.	はないのできる	1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2

Name or number   Where built   2	- 1		Ф	Din	nensio	ns	CLEW	dent	0			pes	ant	
Ellet   Ellet   Ederal   Ede	Name or number	Where built	Complete	Length (extreme)	Beam	Draught	Number of s	Standar Displacem		mum	Armament	Torpedo tu	Compleme	Fue
Ellet   Federal   Federa		510		Feet	Feet	Feet		Tons		Knots		10	e de la	Ton
Ragley   Craven   Gridley   Craven   Gridley   Craven   Gridley   Graven   Graven	Ellet Lang Maury Mayrant McCall Rhind Stack Sterett Trippe	Federal Bethlehem Boston Bethlehem Philadelphia Norfolk Charleston Boston		341	341	92	2	1500	50,000	36				
Dunial Fanning	Craven Gridley Helm Mugford Patterson	Bethlehem Bethlehem Norfolk Boston Puget	1938	341	342	93	2	1500	50,000	36	4 5-in., several smaller.			
Caselin   Caselin   Conjugham   Caselin   Conjugham   Caselin   Conjugham   Caselin   Conjugham   Caselin   Conjugham   Caselin   Conjugham   Caselin   Ca	Dunlap			341	341	92	2	1500	50,000	36	6 5-in., 6 1·5-in.	12 21-in.		
Aylwin	Case Cassin Conyngham Cummings Downes Drayton Flusser Lamson Mahan Reid Shaw Smith	Philadelphia Staten I Staten I Boston Bath Federal Bath Staten I Federal Philadelphia Mare I		- 341	342	92	2	1500	50,000	36	4 5-in., 4 1·5- in.			
Hulbert †Trever †Trever †Trever †Trever †Zane Mare Island. 1921,,,,,,,	Aylwin Dale Dewey Farragut Hull Macdonough Monaghan	New York Bath Bethlehem New York Boston Boston		341	341	91	2	1400	50,000	36½				
Trever		Norfolk, N.W.		314.4	31	9.8	2	1190	26,000	35			122	375
Lawrence New York 1921	†Trever †Zane Litchfield *Thornton *Ballard ‡Greene *Gillis	Mare Island.  Bethlehem S.B. Co., Squantum Bethlehem S.B. Co.,	1922 1921 1920 1919 "	,, ,, ,, ,,	;; ;; ;; ;; ;;	,, ,, ,, ,,	;; ;; ;; ;; ;;	;; ;; ;; ;; ;;	27,000	" " " " " " " "	(Kane, Fox, Brooks, Gilmer, and Hatfield have 4 5-in. guns)	" " " "	?? ?? ?? ?? ??	;; ;; ;; ;; ;;
Goff Williamson	†Hopkins	New York S.B. Co.	1920	,,,	,,	,,	,,	1 000	"		,,		11.00	
Toverton	Goff Williamson ‡Sands	"	1921 1920 "	"	"	"	"	" "	"	"	Marie Property	,, ,,	"	"
*Kane	Overton McFarland	"	"	"	"	"	"	"	)) ))	"	"	"	"	"
Hatfield " " " " " " " " " " " " " " " " " " "	Kane Fox Gilmer Brooks	"	",	"	"	"	"	"	127	"	"	"	"	"

[·] Seaplane tenders.

[†] Minesweepers.

[‡] High-speed Transport.

### United States-continued.

		P	Din	nensio	ons	crew	dent				pes	out	1000
Name or number	Where built	Completed	Length (extreme)	Beam	Draught	Number of screws	Standard Displacement	Horse- power	Maxi- mum speed	Armament	Torpedo tubes	Complement	Fu
DESTROYERS—contd.	Cremp De	1921	Feet 314.4	Feet 31	Feet 9.8	2	Tons	27,000	Knots 35	4 4 day 1 9 day	4	122	Tor
Paul Jones John D. Ford	Cramp, Pa.	1920	314.4	01	"	"	1190		"	4 4 in., 1 3-in. A.A. (Parrot,	triple	"	91
McCormick	"	**	,,	,,	,,	"	,,	26,000	,,	Whipple,	21-in.	"	,,,
Bulmer MacLeish	,,	"	"	,,	"	"	"	**	**	Edws. & Borie have	"	11	23
Whipple	"	"	"	"	"	"	"	"	"	4 5-in. guns.)	"	"	99
J. D. Edwards	"	,,	**	,,	"	**	33	"	11	**	"	**	21
Barker	,,	1919	,,	,,	,,	,,	,,	27,000	"	4 4-in., 1 3-in.	4	,,	21
†Long	",	,,	"	,,	,,	,,	,,	,,	"	A.A. (Long	triple	"	91
†Hovey †Southard	"	"	"	,,	"	,,	,,	"	**	and Hovey have 6 4-in.	21-in.	"	91
†Chandler	",	"	"	"	"	"	"	"	"	twin mtgs.	"	"	**
Cimilator	"	**	"	,,,	,,,	"	,,,	,,,	,,	and 1 3-in.	"	139	33
Dallas	Newport News	1920						25,000		A.A.) 4 4-in., 1 3-in.	4	122	37
‡George E. Badger	S.B. Co.	1921	"	"	"	"	"	25,000	"	A.A.	triple	11	31
‡Goldsborough	"	1920	,,	,,	. 11	,,	"	"	17	1 San Frank	21-in.	"	33
Dahlgren ‡Clemson	,,	1919	,,	,,	"	,,	,,,	"	>>	**	"	- "	"
‡Clemson	"	1010	"	"	"	"	"	"	"	"	93	"	"
†Stansbury	Union, I.W.	1919	314-4	31	9.8	,,	1060	27,000	35	4 4-in., 1 3-in.	4	122	28
†Howard †Hogan	",	"	"	"	"	"	"	"	22	Δ.Δ.	triple 21-in.	"	23
Hogan	"	"	"	9.9	"	"	**	"	,,	**	21-111.	"	**
‡Crosby	Fore River	**	,,	99	,,	,,	,,	,,	,,	,,	**	"	,,
†Palmer	S.B. Co. N.Y. S.B. Co.	1919					1090	26,000		The state of		775	28
Herbert	,,	"	"	"	"	"	,,	20,000	"	"	"	33	11
Schenck	,,	,,	,,	"	"	,,	"	117	**	0	,,	"	11
Dickerson J. Fred Talbot	Cramp, Phil.	"	"	,,	,,	"	,,	"	"	"	"	22	28
Cole	Cramp, rim.	"	"	",	"	"	"	"	"	"	"	"	11
Ellis	,,	,,	,,	,,	"	"	,,	,,	"	'''	**	31	11
Bernadou Dupont	,,	,,	"	"	"	,,	"	"	**	"	,,	"	**
Biddle	"	,,	"	"	"	"	"	"	"	"	"	"	23
Blakeley	,,	,,	,,	,,	,,	,,	,,	"	"	,,	**	"	23
Barney Breckinridge	**	,,	,,	"	,,	"	,,	"	"	"	**	"	"
‡Roper	",	"	"	"	"	"	"	"	"	"	"	27	**
†Elliot	,,	,,	1,	,,	,,	,,	,,	,,	"	"	"	"	11
Greer	,,	1918	,,	"	**	,,,	,,	"	,,	1)	,,	11	22
Tarbell Upshur	",	1910	"	"	"	"	"	"	"	"	"	"	22
			"	1		,,	,"		,,	2	"		06
†Hamilton	Mare Island, N.Y.	1919 1918	,,	21	9.5	,,,	"	24,200	,,	**	"	.99	,,,
‡Ward Kennison	N.1.	1919	"	"	"	11	"	"	**	"	"	"	23
‡Kilty	,,	1918	"	,,	,,	,,	,,	,,	,,	"	"	"	33
†Boggs		,,	,,	"	"	"	11	"	,,	**	"	"	23
Babbitt	New York	1919	,,	31	9.8	,,	,,	26,000	,,	,,	,,	,,	,,
Badger	S.B. Co.	,,	,,	,,	,,	,,	,,	"	"	",	"	. 19	,,,
‡Tattnall	**	**	"	,,	,,	"	,,	,,	,,	"	"	11	3,
†Lamberton	Newport News S. Co.	1918	,,	,,	,,		,,	25,000	,,	- 6	,,	**	"
Lea	Cramp, Pa.	"	,,	,,	,,		,,	26,000	,,	4 4-in., 1 3-in.	**	**	. "
† Dorsey † Dent	,,	,,	"	,,	"		,,	"	**	A.A. (Rath- burne has 3	33	**	"
i Waters	**	"	"	"	"	,,	"	"	"	4-in.)	"	"	77
:Talbot	"		,,	"	"	1	,,	,,	,,		",	**	
‡Rathburne	,,	1919	"	"	"		,,	,,	,,	,,	,,,	"	"
Crane	Union Plant	1919	,,	,,	,,		1060	27,000	,,	4 4-in., 1 3-in.	,, (1)	122	25
Chew	,,		,,	31	99		,,	,,	,,	A.A.	"	"	21
‡Schley ‡Stringham	Fore River	1918	"	"	"		"	,,	"	"	"	"	27
+puminam	S.B. Co.	,,	"	"	"		"	"	,,	,,	"	1000	31
‡Manley	Bath, I.W.	1917	315.5	30.7	9.5		1020	20,000	32	3 4-in., 1 3-in. A.A.	12 21-in.	122	26
Allen	,,	,,	315-8	29.9	9.8		920	17,500	30	4 4-in., 1 3-in. A.A.	triple 21-in.	75	29

† Minesweepers.

‡ High-speed Transports.

		P	Din	nensio	ons	crew	ent b.		Maxi-	and -de	pes	ent	
Name or number	Where built	Completed	Length (extreme)	Beam	Draught	Number of screws	Displacement Surf./Sub.	Horse- power	speed Surf. Sub.	Armament	Torpedo tubes	Complement	Fue
DESTROYER ESCORTS, about 350 in No.		1943- 44	Feet 300	Feet 36	Feet 10	2	Tons 1400	6000- 12,000	Knots 20-24	3-in, to 5-in,	3 21-in.		Ton
DESTROYERS NOW FITTED AS												900	
MINELAYERS— Preble	Bath Ironworks	1920	314-4	30.5	9	2	1160	27,000	35	4 4-in., 1 3-in.		107	37
Pruitt	path fromworks	1920	,,	,,	,,	,,	"	21,000	"	A.A, 92 mines		"	,,
Sicard	,,	"	"	"	"	**	"	**	39	"	Hay	35	"
Tracy	Cramp	. 22.0	,,	,,	,,	,,	"	25,000	"	4 4-in., 1 3-in.	-	120	4
Ramsay Gamble	Newport News S. Co.	1919	"	"	"	"	"	27	"	A.A., 92 mines	,,	11	111
Breese Montgomery	,,	"	,,,	,,	,,	"	"	33	33	,,	1)	"	22
Montgomery	11	"	**	"	"	"	"	27	**	,,	**	- 13	"
SUBMARINES-											1.00	121	1
Albacore Class:													-
Angler Bashaw	Electric Boat Co.		+					(0.11)	99			(Trop	1
Bergall	"											19	1
Besugo Blenny	"											133	
Blower	"											40	111
Blueback Bluegill	"										1	1	
Bream Caiman												AL PUL	
Cavalla	"												1
Cobia Croaker	"												1
Dace	"											130	
Flasher Flier	,,										1	THE	
Flounder	"					+				1			
Gabilan Gunnel	,,		1									177	101
Gurnard	"											1	
Haddo Hake												1.	1.
Harder	,,				1					11.		100	1
Hoe Jack	"									I I the sta			1
Lapon	,,									1			
Mingo Muskallonge	,,	1943	- 307	27		2	1526	6500	21	1 4-in.	10	1	1
Paddle Pargo	,,	44		1				1	-	to be a mile	21-in.	1	1
Pogy	Manitowoc S.B. Co.							1				lun.	1
Pompon Puffer	,,											1200	
Hammerhead	,,					1			1	P - dyl -ul	1	1	10
Peto Icefish	"												
Jallao	"											100	1
Kete Rasher	"				10.1	1				A least little	1	Post	1
Raton	,,											1	mes.
Ray Redfin	"									le minosperie		THURS	
Rabalo	"											22 DA F	166
Rock Sawfish	Portsmouth N.Y.									Carl of the Took	1	Deality.	
Scamp	,,										1	73	400
Scorpion Snook	,,									V st stimmerson	1	100	
Steelhead Sunfish	Mare Island N.Y.											1182	b or
Tunny	Mare Island N.1.							Hot		2	Lienter	No.	
Tinosa Tullibee	,,,										-		
Gar	Electric Boat Co.									real transfer	d mo	des I	540
Grayback Grayling	Portsmouth N.Y.									E at dimension	100	0.026	200
Gudgeon	Mare Island N.Y.	1			1						1	Sec.	90

		pe	Din	nensie	ons	CLOW	ent o.		Maxi-		ibes	ant	Fue
Name or number	Where built	Completed	Length (extreme)	Beam	Draught	Number of screws	Displacement Surf./Sub.	Horse- power	speed Surf. Sub.	Armament	Torpedo tubes	Complement	oil
SUBMARINES—		-	Feet	Feet	Feet		Tons		Knots				Ton
Albacore Class-											7,000	7/01	100
Gato	Electric Boat Co.											16.0	100
Greenling	"										5.6	You	100
Grouper Growler	"										1111		100
Guardfish Atule	Portsmouth N.Y.											1	12
Drum	rorusmouth N.1.											11152	
Flying Fish Finback	,,	1											
Haddock	"												19
Halibut Seacat	,,											165	13
Seadevil	"												
Seadog Seafox	"												
Sea Poacher	"											0.00	dia
Sea Robin Sea Owl	,,						1526	6500	91			-	1
Spikefish	Mara Island N V	1943-	307	27		2	1020	-	21	1 4-in.	10	1	10
Silversides Trepang	Mare Island N.Y.	44									21-in.	Pality	9
Trigger Wahoo	,,											7 000	13
Whale	"											100	13
Albacore Barb	Electric Boat Co.												100
Blackfish	"		1									150	12
Bluefish Bonefish	,,											ilen	0
Cod	"											ink!	13
Corvina Blackfin	Cramp											100	9
Dragonet	,,											11,439	13
Escolar Herring	Portsmouth N.Y.	1942	,,	,,		,,	,,	,,	**	1 3-in.	**		13
Herring Kingfish	"	**	"	,,		,,	23	"	"		"	1400	16
Shad	,, ,	"	,,	"		"	",	"	"			72	11
" M " Class	TI 11 D 10	1041					800						
Mackerel	Electric Boat Co.	1941					-				8 21-in.	12	9
Marlin	Portsmouth N.Y.	1942					"				,,,		1
" T " Class Tambor	Electric Boat Co.	1940	298	27	13.3	2	1475			1 3-in,	10	100	
2000	meetic boat co.	1010	W.L.		100	-	_			1 0-m.	21-in.	-00	1
Tautog Thresher	,,	1941	**	"	**	"	**			",	"	-30	1
Gar	Mare Island N.Y.	1941	,,,	,,	,,	"	11			"	"	The same	1
Tuna	"	,,	"	11	"	"	",			,,	,,	100	13
New "S" Class							1450					100	-
Salmon	Electric Boat Co.	1939	,,	26	141	,,	1450		$\frac{17}{8}$	**	6	55	15
Seal	,,	,,	"	,,	,,	,,	,,		,,	,,	21-in.	33	13
Skipjack Snapper	Portsmouth N.Y.	1938	,,,	25	11	,,	9.5		11	,,	"	11	1
Stringray		1900	"	"	"	"	"		"	"	"	27	
Sturgeon Sargo	Mare Island N.Y. Electric Boat Co.	1939	"	11	71	,,	**		"	,,	29	"	1
Saury	11	"	"	"	"	"	"		"	,,	17	32	1
Spearfish Sculpin	Portsmouth N.Y.	1940	"	"	,,	"	**		19	**	"	22	
Sailfish	"	"	,,	"	"	"	"		"	"	"	11	
(ex-Squalus) Swordfish	Mare Island N.Y.	1939	,,	,,	,,	,,	,,		,,	,,	**	**	1
												-110	1
Sea Dragon Sea Raven	Electrical Boat Co. Portsmouth N.Y.	"	11	"	"	"	"		"	,,	33	**	
Seawolf	21. 21. 22. 22. 22. 22. 22. 22. 22. 22.	71	,,,	111	"	"	,,,		,,,	1)	",	12	

		7	Din	nensi	ons	crew	ub.		Maxi-		ibes	ent	
Name or number	Where built	Completed	Length (extreme)	Beam	Draught	Number of screws	Displacement Surf./Sub.	Horse- power	speed Surf. Sub.	Armament	Torpedo tubes	Complement	Fue
SUBMARINES—			Feet	Feet	Feet		Tons		Knots				Tor
contd. P" Class Porpoise	Portsmouth N.Y.	1936	283	24-9	13	2	$\frac{1310}{1934}$	5000	21	1 4-in.	6 21-in.	55	
Pike	.,	,,	"	,,	,,	, ,,	,,	,,	,,	,,	. ,,	,,	
Tarpon	Electric Boat Co.	,,	298	25.1	13.9	2	1315	5000	21	1 3-in.	6 21-in.	54	
Permit	,,	1936- 1937	3001	25	13.8	2	$\frac{1330}{1998}$		17 8	1 4-in.	6 21-in.	54	
Plunger	Portsmouth N.Y.	"	,,	,,	,,	,,	,,	,,	,,	,,	"	,,	
Pollack Pompano	Mare Island N.Y.	"	"	"	"	"	"	"	"	"	"	"	
' D'' Class Dolphin	Portsmouth N.Y.	1932	319	27.8	13	2	1540 2215	4250 875	17 8	1 4-in., 1 M.	6 21-in,	58	
"C" Class Cachalot	Portsmouth N.Y.	1934	2712	24.8	13	2	1110 1650	3100 800	17 8	1 3-in. A.A., 1	6 21-in,	45	
Cuttlefish	Electric Boat Co.	,,	,,	,,	,,	,,	,,	,,	,,		,,	,,	1
N " Class Narwhal	Portsmouth N.Y.	1930	371	33.3	16	2	2730 3960	5450 1270	17 8·5	2 6-in.	6 21-in.	88	185
Nautilus	Mare Island N.Y.	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,
B" Class Bonita Bass Barracuda	Portsmouth N.Y.	1926 1925	341.5	27	14.6	2	2000	6700 1200	19 8	1 3-in. A.A., 2 M.	6 21-in.	87	10
'S" Class		,,,	"	160		,"	1		,,	"		0	-
S48	Lake T.B. Co., Bridgeport	1922	267	21.8	13.5	2	$\frac{1000}{1458}$	2000 1500	11.0	1 4-in.	5 21-in.	38	2
S47* S46*	Bethlehem Ship- building Corpn., Quincy Plant	1925	225.3		16	2	850 1126	1200 1500	14 10.4	1 4-in.	21-in.	44	15
S45* S43*	"	1924	"	"	"	"	11	,,	,,	,,	"	"	,,
842*	"	1924	,,	"	"	"	"	",	"	,,	"	"	,,
841*	Bethlehem Ship- building Corpn., Union Plant	1924	219-3	,,	,,	,,	800 1062	1200 1500	14.5	1 4-in.	4 21-in.	42	1
S40* S38*	**	1923	,,	,,	,,	,,	"		,,	,,	,,	,,	,
S37*	**	"	,,	"	"	"	"	,,	,,	,,	,,	,,	,
S35* S34*		"	,,	"	"	"	"	",	"	",	"	"	,
S33* S32*	,,	,,	"	,,	,,	"	,,	,,	"	,,	,,	,,	,
S31*	"	"	,,	"	"	"	"	"	"	,,,	"	"	,
S30*	"	1920	,,	"	"	,,	,,	,,	,,	,,	,,	"	,
S23*	Bethlehem Ship- building Corpn., Quincy Plant	1923	219-3	20-5	16	2	800 1062	1200 1500	11	1 4-in.	21-in.	42	1
S20* S18*	**	1922 1923	,,	,,	,,	,,	"	"	,,	,,	,,	,,	,
817	Lake T.B. Co., Bridgeport	1921	231	21·5	13	2	790 1092	2000 1200	1 <u>5·25</u> 9	,,	21-in.	38	1
S16	,,	1920	,,	,,	,,	,,	"	,,	,,	,,	,,	,,	,
S15 S14	"	1921	,,	"	"	"	"	"		,,,	"	"	,
813	Portsmouth N.Y.	1923	231	21.8		2	$\frac{790}{1092}$	$\frac{2000}{1200}$	14·75 9	,,	5 21-in.	38	1
S12	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	",	,,	,
811	,,	"	"	"	"	"	"	"	"	,,	"	"	1 ,

[•] Designed by Electric Boat Co., Groton, Conn.



### United States—continued.

		7	Din	nensi	ons.	TOWS	et .		Maxi-		<b>8</b>	et	1
Name or number	Where built	Completed	Length (extreme)	Вевт	Draught	Number of screws	Displacement Surf./Sub.	Horse- power	speed Surf. Sub.	Armament	Torpedo tubes	Complement	Fuel
SUBMARINES—			Feet	Feet	Feet		Tons		Knots				Tons
R20*	Union, I.W.	1918	186-1	17-5	14.5	2	530 680	880 934	18·5 10·5	1 3-in.	4 21-in.	30	63
R18*	1 ,,	,,	,,	,,,	,,	,,	,,	,,	,,	,,	"	•••	٠,
R17	,,	"	,,	"	,,	,,	"	,,	,,	,,	,,	"	••
R16* R15*	,,	,,,	**	"	"	**	,,,	,,	,,	"	"	"	**
R14*	Fore River S.B. Co.	1919	"	"	"	"	"	"	"	"	"	"	<b>"</b>
R13*	i e		"	"	"	"	''	"	"	"	"	"	"
R11*	",	",	"	1 ::	,,,	",	,,	"	"	,,	"	<b>"</b>	";
R10*	1 "	"	;;	",	,,	",	;;	",	"	,,	",	١;;	;;
R9*	1 ;	,,	,,	;;	,,	,,	,,	;;	;;	;;	;;	,,	1 ;;
R7*	1 ;;	,,	,,	;;	,,	۱,,	,,	,,	;;	,,	1 ;;	,,	
R6*	,	,,	.,	,,	۰,,	,,	,,,	,,	,,	,,	,,	,,	,,
R5*	,,	,,	,,	,,,	,,	٠,,	,,	,,	۱,,	,,	١,,	,,	
R4*	,,	,,	,,,	,,,	,, l	,,	,,,	,,	,,	"	1 "	"	
R3	,,,	,,	"	,,	,,	,,	,,	"	٠,,	,,	.,	,,	••
R2* R1*	,,	"	,,	"	,,	"	,,,	,,	,,,	,,	"	,,	**
KI*	, ,,	,,,	"	"	"	,,	,,,	**	"	"	"	"	**
O10*	,,	1918	172-8	17.5	14-4	2	480 624	880 740	10.5	,,	4 21-in.	80	73
08*	٠,	,,	,,	,,	,,	,,	٠,,	,,	٠,,	,,	۱,,	,,	١,,
07*	,,	,,	,,	.,	,,	,,	,,	10	,,	,,	1	,,	
06*	,,	,,,	"	ļ "	۱ ,, ا	,,	,,	,,	,,	,,	,,	,,	
04*		۱,,,	,,	,,	٠,,	,,	,,	,,	<b> </b> "	,,	"	,,	
030	,,	,,	,,		,,	,,	,,	,,	,,	,,	,,	"	••
02*	,,	,,	,,	,,	٠,,	,,	,,	"	••	**	,,,	,,	••

[•] Designed by Electric Boat Co., Groton, Conn.

The machinery contractors for the vessels of the E.B. Co. Design built in yards other than the Navy Yards were the New London Ship and Eng. Co., Groton, Conn, and the hulls were built under sub-contract from the E.B. Co.

# NAVAL AIRCRAFT

NAVAL AIRCRAFT—BRITISH

	Armament		:	6 ·5-inch M.Ga.	6 ·6-Inch M.Gs.	Bombs, a torped or mine. I fixed Vickers gun firing through all screw are and Lewis gun in rear cookpit.
	Initial climb	Ft./ min.	:	:	:	1,120
	Range	Speed P.H.	:	:	:	131
nance	Ra	Miles. Speed at M.P.H.	:	1,700	1,500	720
Performance	Service Seling		31,000	36,000	87,000	19,250
	at Ht.	ė	16,400	:	:	000'9
	Speed at Ht.	M.P.H.	302	415	886	Land 144 Sea 134
	at Ht.	દ્ધ	1 <b>6</b> ,250	:	:	4,750
	B.H.P. at speed at Ht.	R.P.M.	:	:	:	:
Engine	B.H.P.	B.H.P.	1,030	2,000	2,000	750
Z.	Type		12-cyl. V liquid- cooled in-line.	18-cyl. Radial	18-cyl. Radial. Double row	:
	Name		Rolls- Royce Merlin II or III.	Pratt and Whitney Double Wasp.	Pratt and Whitney or Wright.	Bristol Pegasus 30
ght	bebaod	lb.	6,780	10,000	:	Land 6,750 8ea 7,360
Weight	Empty	.éi	:	:	:	Land 4,700 8es 5,800
	sera gaiW	£. £.	258	814	884	240
nsions	Height	r. in.	18 14	12 2	11 8	Land 112 4 1868 14 7
Dimensic	Length	7. la .f.	32 3	82 10 12	33 4	Land 35 8 Sea 40 6
	aaq8	न्: वं	40 0	41 0	42 10	45 6
	Туре		Single- engine single- seat fighter.	Single- engine single-seat fighter	Single- engine single- seat fighter.	Single- engine 2/3-seat torpedo- spotter reconnals- sance biplane. (wheels or floats).
	Name		Hawker Sea Hurricane.	Vought Shorsky Corsair.	Grumman Helicat.	Fairey Swordfish.

2 Vickers :508 M.Gs. free. 1 Browning fixed. 1 torpedo.	2 M.Gs.	2 20-mm. can- non and 4 803-in. Browning	2 20-mm. can- non. 4 ·803 Browning M.Gs.	2 free '5-inch Browning M.Gs. 1 fixed. 1 22-in. tor- pedo.	2 · 30 machine guns. 2 100-lb. bombs.	:	2 '303 Vickers guns. 1 18-in. torpedo or 4 bombs.
:	1,150	:	:	:	:	:	:
:	:	:	:	:	152	:	:
:	009	:	:	1,400	806	:	:
4,500 18,800	18,500	:	:	20,000	18,200	:	:
4,500	Sea level 4,750	19,500	:	7,500	2,000	:	:
161	124	369	:	270	171	190	:
3,500	:	17,000	:	:	5,000	:	:
:	:	:	:	:	:	:	:
1,130	:	1,150	:	1,600	400	520	:
14-cyl. sloevo- valve afr- cooled radial.	9-cyl. air- cooled radial.	12-cyl. V liquid- cooled in line.	12 cyl. V liquid- cooled in line.	Double row radial air-	Radial.	12 cyl. inverted V air- cooled.	12-cyl. liquid- cooled in line.
623 7,250 10,460 Bristol	Bristol Pegasus VI.	Bolls- Boyce Merlin 45.	Rolls- Royce Merlin LXI.	Wright Cyclone 14.	Pratt & Whitney Wasp Junior.	Ranger V-770-6.	Rolls- Royce Merlin XXXII.
10,460	7,200	6,300	6,600	12,000	4,980	5,730	14,250
7,250	4,900	:	:	:	8,335	:	9,750 14,250
829	<b>61</b> 0	242	:	485	261.8	290	367
14 0 114 0 114 0 114 0	15 3	11 5	:	18 9	14 8	Sea 15 0 Land 11 5	16 6
Land 39 10 86a 42 5	37 7	20 11	81 O <del>‡</del>	9	33 7	Sea 36 10 Land 34 2	9 04
0 09	45 10	36 10	36 10	0 83	35 11	0 88	49 2
Single- engine 2/3-seat torpodo- spotter reconnals- sance biplane (wheels or floats).	Single- engine fleet spotter. Amphiblan.	Single- engine single- seat fighter.	Single- engine single-seat fighter.	Single- engine 3-seat torpedo monoplane.	Single- engine 2-seat obs. scout (wheels or single float).	Single- engine 2-seat obs. scout (wheels or floats).	Single- engine 3-seat torpedo monoplane.
Fairey Albacore I.	Vickers- Armstrongs Walrus II.	Viokers- Armstrongs Seafire.	Vickers- Armstrongs Seafire II.	Grumman Avenger.	A Vought Skorsky Kingflaher.	Curtiss- Wright Seamew.	Fairey Barracuda

NAVAL AIRCRAFT—BRITISH—continued

		4 20-mm. cannon.	2 20-mm. cannon. 4 ·303-in. Browning machine. guns.	Bombs or depth depth 3 Vickers 30 Y K " gun.	
	Initial climb	Ft./ min.	:	:	:
	e Br	Speed P.H.	:	:	:
Performance	Range	Miles. Speed at M.P.H.	:	:	:
Perfo	Service Selling		:	:	:
	at Ht.	£.	:	:	:
	Speed at Ht.	M.P.H.	:	:	:
	at Ht.	ß.	:	:	:
	B.H.P. at speed at Ht.	R.P.M.	:	:	:
Engine	B.H.P.	B.H.P.	2,000	1,470	870
R	Eng Type		12-cyl. Bquid- cooled, upright V in line.	12-cyl. V liquid cooled.	:
	Мате		Rolls- Royce Griffon II.	Rolls- Royce Merlin 55.	Bristol Mercury 30.
Weight	bobaod	ĕ	:	Abt. 7,000	Abt. 10,000
W.	Einpty	ė	<u> </u> :	:	:
	Wing area	8q. ft.	:	242	610 (main plane)
nsions	Height	F. in	13 7	0 8	16 2 42 (tall down)
Dimens	Length	r. in	37 0	000	0 08
	nage	r. In	44 6	36 8	46 0
	Туре		Low- winged, winged, single- engine 2-seat fighter reconnais- sance monoplane.	Single- engine single- sent fighter.	Single- engine, Sid-seat Sid-seat Spotter reconnais- gance general purpose billian
	Name		Fairey firefly.	Vickers- Armstrongs Seafire III.	Vickers- Armstrongs Sea Otter I.

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			1240	1.2	1 4 <b>3</b> 0 4 5 .	1 400 % 400	<b>.</b> 
	Armament		1 21-in. tor pedo or 2,000-ib.bom load.		Two .50-in M.Gs. firin forward. 2.3 M.Gs. 1 500 lb. bomb an smaller ones.	<u> </u>	6 ·5-in. M.Gs.
	dmitial cilmb	P.T.	:	2,476	1,780	2,500	:
	nge	Speed, M.P.H.	:	:	:	:	:
nance	R	Millos	1.400	830	1,116	695	:
Perform	Service Builise		Above 20,000	28,000	24,300	23,000	:
	t At.	Ė	:	13,500	7,500	12,000	:
	Speed	M.P.H.	260	325	275	284	:
	at Ht.	લં	:	13,500	:	:	:
	at speed	B.P.M.	:	:	:	:	:
eg	B.H.P.	B.H.P.	1,600	1,000	950	1,600	2,000
En	Туре		Air- cooled radial.	Air- cooled radial.	9-cyl. air- cooled radial.	Radial.	Double row radial.
	Name		Wright Double Cyclone.	Wright Cyclone B-1820 G-205A.	Wright Cyclone R-1820- 32.	Wright Double Row Cyclone GR-2600	Pratt & Whitney or Wright
ţ,	bebao.I	ė	:	5,876	10,000	12,256	:
Wel	Empty	ĕ	:	4,649	6,500	7,490	:
	aota galW		06	098	325	:	334
arlons	Height	न् वं	13 9	1 6	8 8	15 3	11 3
Dime	Length	ਜ਼ ਬ	41 0	28 10	38 2	39 <b>6</b>	33 7
	gben	R. In	54 2	0 88	41 6	67 0	42 10
	Туре		Single- engine 2/3 seat torpedo bomber.	Single- engine single- seat fighter.	Single- engine 2-seat scout- bomber.	Single- engine 2-seat scout dive- bomber.	Single- engine single- seat fighter.
	Name		Grumman Avenger. TBF-1.	Grumman Wildcat. F4F -4.	Douglas Dauntless. SBD-3 (5).	G Brewster Buccaneer. 8B2A-2.	Grumman Hellcat. F6F.
	Dimensions Weight Engine Performance	Dimensions Weight  Longth  Holght  Holght  Wing area  B.H.P. at speed at Ht.  Speed at Ht.  Bood at Ht.  Bood at Ht.  Benge	Dimensions Weight Engine Bigine Performance  Type Speed at Ht. Speed a	Type   Single-   54 2   41 0   13 9   490     Wright   Air-   Cyclone.   Factor   Facto	Type   25   41 0   13 9   490     Wright   Air-   1,000   19,000   28 10   9 1   260   4,649   5,876   Wright   Reliance   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000	Type   25   12   12   12   13   14   15   15   15   15   15   15   15	Type   24   1   1   1   1   1   1   1   1   1

# NAVAL AIRCRAFT—UNITED STATES OF AMERICA—continued

	Armament		6 ·5-inch ma- chine guns.	3 M.Gs.	2 '5-in. M.Gs.  1 free gun rear cockpit. 2 500-lb. tor- pedo-rockets.	1 '303-in. in top cowling firing through air-screw arc. 1 '5-in.M.G.In rear cockpit, movable. Carries 1 torpedo or A.P. bomb.	guns. 2 100-lb.
	Initial climb	Ft./ min.	:	4	:	: Tentaretina	:
	age age	Speed, M.P.H.	:	:	:	180	152
ance	Range	Miles	:	1,000	:	982	808
Performance	Service		:	0ver 1,500	24,700	:	18,200
	at Ht.	ft.	:	2,000	12,400	000'6	2,000
	Speed at Ht.	M.P.H.	415	190	281	225	171
	at Ht.	ft.	:	:	:	:	2,000
	B.H.P. at speed at Ht.	R.P.M.	:	:	:	: 1	:
dne	B.H.P.	B.H.P.	2,000	520	1,800	825	450
Engine	Туре		Double row radial.	12-cyl, inverted V air- cooled.	14-cyl. air- cooled radial	:	Radial.
	Name		Pratt & Whitney Double Wasp.	Ranger V-770-6.	Wright Double- Row "Cyclone 14" GR -2600- B5.	Pratt & Whitney Twin Wasp Junior	Pratt & Whitney Wasp
tht	Loaded	lb.	10,000	5,729	16,607	9,300	4,980
Weight	Empty	lb.	:	4,284	10,114 16,607	:	3,335
	Wing area	sq. ft.	314	290	422	: "	261.8
ions	Height	ft. in.	22	Sea 16 7 Land 11 5	13 1	18 1	14 8
Dimensions	Гепgth	ft. in.	33 4	Sea 35 8 Land 34 2	36 9	922	33 7
	naqe	ft. In.	41 0	38 0	6 64	0 00	35 11
	Type		Single- engine single- seat fighter.	Single- engine 2-seat obs. scout (wheels or floats).	Single- engine 2-seat dive- bomber.	8-seat torpedo- bomber.	Single- engine float monoplane
	Name		Vought- Sikorsky Corsair. F4U-2.	Curtiss Seaguil. SO3C-1.	Outriss Helidiver. SB20-1.	Douglas Devastator.	Vought- Sikorsky Kingfisher OS2II-8

In some instances aircraft bearing the same name in both the British and the United States navies show slight dimensional and performance differences. These are often the result of

# NAVAL AIRCRAFT—GERMANY AND JAPAN

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	Armament	<b>-</b>	2 20-mm, can- non in wings and 2 7.7-mm. M.Ga. in motor cowl- ing 2 132-lb. bombs.	2 20-mm. can- non in wings, 2 7-7-mm, M.Gs. in motor cowl- ing, 2 132-ib, bombs.	2 7.7-mm. forward, 1 7.8-mm. 1078 lb. of bombs.	2 7.7-mm.M.G. fixed forward, 1 7.7-mm. on top. Carries 1100 - lb. bombs or 18- in. torpedo.
	Initial climb	Ft.	:	:	:	:
	Bange	Speed M.P.H.	:	:	:	:
nance	<b>8</b>	Miles	:	:	:	:
Performance	Service Satileo		39,900	35,900	29,800	<b>88</b> ,800
	at Ht.	뵨	20,500	20,000	13,000	9000
	Speed at Ht.	M.P.H.	341	848	254	225
	at Ht.	દાં	:	:	:	;
	B.H.P. at Speed at Ht.	R.P.M.	:	:	:	:
Engine	B.H.P.	B.H.P. B.P.M.	1120	:	1000	:
En	Type		14-cyl. air- cooled radial.	14-cyl. alr. cooled radial.	14-cyl. air- cooled radial.	14-cyl. air. cooled radial.
	Name		Nakajima Sakae 21	:	Mitsubishi Kinsel MK-54	Nakajima Sakao 2
ght	bebao.I	Ib.	5650	5650	2006	9946
Weight	Kmpty	.je	:	:	:	:
	Wing area	8q. ft.	246	232	370	415
Dimensions	Height	ft. In.	9	9 1	13,	13 6
Δ	Length	.f.	28 5	28 5	34 9	9 78
	uwdg	r. in	39 5	36 6	47 7	51 0
	Туре		Single- engine single seat fighter.	Single- engine single- seat fighter.	Single- engine 2-seat dive- bomber.	Single- engine 2 or 3- seat torpedo bomber.
	Name		Miteubishi Navy 0 Mk. 2 ZEKE 2.	Miteubishi Navy 0 Mk. 2, HAMP.	Aichi T-99 Mk. 2, VAL II.	Mitsubishi T-97-Mk. 3 KATE.

NAVAL AIRCRAFT—GERMANY AND JAPAN—continued

	Armament		2 forward fixed cannon, 2 forward, fixed M.G. and one morable rear M.G. Bombs can be carried under the wings.	1 forward fixed M.G. and 1 movable rear.	2. 7.7.mm. M.Gs. in cowling, 1 or 2. 7.7.mm. at rear of cockpit, 11760-lb. lorpedo, or 1 1100-lb. or 8 250-lb.bombs.	17.7-mm. forward, 120.mm. on top, 27.mm. at side, 17.mm. mm. madernest, 2 200-lb, bombe or 1 torpedo.
	dmilo faltinī	Ft./ mdn.	086	:	:	:
	Range	Speed M.P.H.	158	:	:	:
Performance	PH.	Miles	670	940	009	2000
Perf	Service		23,000	986,22	:	24,000
	at Ht.	ਦੰ	13,120	11,550	0008	16,000
	Speed at Ht.	M.P.H.	193	808	522	241
	at Ht.	સં	:	:	:	:
	B.H.P. at Speed at Ht.	R.P.M.	:	:	:	:
Engine	B.H.P.	B.H.P.	006	006	:	986
En	Eng.		9-cyl. air- cooled radial.	Air- cooled radial.	14-cyl. radial.	14-cyl. radial.
			B.M.W. 132 K.	B.M.W. 132 N.	Nakajima Sakae II.	Kinsel 45.
pt	bebaoJ	Ib.	8200	7656	9946	12,525 21,745
Weight	Rwbęd	JP.	6580	5148	5439	12,525
	sons gaiW	8q. ft.	907	455	415	862
stons	Height	R. In.	16 5	<b>:</b>	13 6	:
Dimensions	d3gns.I	<b>7.</b> II.	& &	30 0	\$ \$	0 79
	naq8	.i.	40 6	44 6	51 0	82 0
	Туре		Single- engine 2-seat reconnais- sance sea- plane.	Single- engine 2-seat reconnais- sance sea- plane.	Single engine 2/8-seat torpedo bomber.	Twin engine 5-seat torpedo.
	Маше		Arado Ar-196.	Hetnkel He-114.	Nakajima Kate 97, Mk. 3.	Miteubiahi T 96. Mr. 2 NELL.

4.7.7-mm. free, 1.20-mm. can- non, 1.18-in, torpedo or 8. 300-lb. bombe,	2 fixed 7.7. M.Gs., 1 free 7.7-M.G. 1 torpedo.	2 or 4 7.7. M. Gs. firing forward, 1 7.7 M. G. in rear cockpit.	:	:	:	2 7.7-mm. firing forward, 1 550-lb. bomb.	:
:	:	   :	:	:	:	:	:
:	135	:	:	:	:	:	:
990	450	225	:	:		:	:
:	:	:	:	:	:	:	:
11,500	7000	14,000	:	:	:	16,500	:
275	155	238	265	Abt. 200	:	326	:
13,500	7000	13,100	:	:	:	14,700	:
:	:	:	:	:	:	:	:
1800	099	940	1050	1000	:	096	:
	<b>.</b> .						
14-cyl. radial	12-cyl. V liquid cooled.	14-cyl. radial.	Radial	14-cyl. air- cooled radial.	14-cyl. radial.	12-cyl. in line.	14-cyl. air- cooled radial.
Kasei 11 radial.		Miteubishi 14-cyl. Zuisel 18. radial.	Mitsubishi Radial Kinsei.	Mitsubishi 14-cyl. K nse 1 cooled			Mitsubishi 14-cyl. Kinsel. afr- 54. radial.
Kasel 11   14-cyl.   radial	8000 Kawanishi. 12-cyl. liquid cooled			Mitenbishi 14-cyl. K nse 1 sir. 44. cooled		Alchi 12-cyl. Atsuta in line 21.	Mitaubishi 14-cyl. Kinsel. afr. 54. cooled
Kasei 11	Kawanishi.	4490 6031 Mitsubishi Zuisel 13.	Mitsubishi Kinsei.	Miteubishi K nse 1 44.	Mitsubishi Kase 1 25.	Aichí Ateuta 21.	Mitsubishi Kinsei. 54.
Kasei 11	8000 Kawanishi.	6031 Miteubishi Zuisei 13.	Mitsubishi Kinsei.	Miteubishi K nse 1 44.	Mitsubishi Kase 1 25.	Atenta 21.	Miteublahi Kinsel. 54.
Kasel 11	680 8000 Kawanishi.	865 4490 6031 Mitsubishi Zuisel 13.	Miteublahi Kinsei.	380 Mitenbishi K nse 1 44.	Mitsubishi Kase 1 25.	Alchi Atauta 21.	Mitaubishi Kinsei. 54.
0 Kasel 11	680 8000 Kawanishi.	365 4490 6031 Miteubishi Zuisel 13.	Mitsubishi	380 Mitanbishi K nse 1	Mitsubishi Kase 1 25.	33 7 Alchi Atauta 21.	Mitaubishi Kinsel. 54.
Kasel 11	0 680 8000 Kawanishi.	6 865 4490 6031 Mitsublahl Zuisel 13.	9 Miteubishi	0 380 Mitenbishi K nse 1 44.	0 Mitsubishi Kase 1 25.	7 Alchi Atauta 21.	7 Mitaubishi Kinsel. 54.
8 64 0 Kasel 11	6 38 0 680 8000 Kawanishi.	0 34 6 365 4490 6031 Miteubishi Zuisel 13.	5 33 9 Kinsei.	0 87 0 380 Mitanbishi K nse 1	0 37 0 Mitsubishi Kase 1 25.	33 7 Alchi Atauta 21.	0 35 7 Kinsel. Kinsel. 54.

### REFERENCE SECTION.

### MISCELLANEOUS.

### DIARY OF NAVAL EVENTS IN 1944.

NOTE.—The dates given in this Diary are taken from accounts, both official and unofficial, which have been published in the Press. Dates derived from the latter cannot at present be guaranteed as accurate.

### JANUARY.

U.S. aircraft attacked Japanese ships at Kavieng (New Ireland);
 2 cruisers, 2 destroyers hit.

2.—Allied aircraft attacked Rabaul (again on 5th, 6th, 8th, 9th, 13th, 16th, 17th, 22nd, 23rd, 24th, 29th, 30th). U.S.A.A.F. attacked targets in Marshall Islands (again on 3rd, 4th, 6th, 8th, 9th, 11th, 29th, 30th). U.S. troops landed at Saidor, N. coast of New Guinea.

3.—British destroyers bombarded Pesaro on Adriatic.

- 4.—U.S.A.A.F. attacked Kiel. Allied aircraft hit 2 Japanese destroyers at Kavieng.
- 5.—Loss of U.S. submarine Pompano announced. U.S.A.A.F, attacked Kiel and airfields at Bordeaux. Allied aircraft hit Japanese cruiser at Kavieng.
- 8.—Sinking of 2 U-boats in Atlantic by British sloops announced. U.S. warships bombarded the Shortlands.
- 9.—Sinking of German blockade runner in S. Atlantic announced. British destroyers bombarded San Benedetto.
- 10.—British destroyers bombarded Pedaso and traffic on E. coast of Italy.
- 11.—Japanese attempted to land at Cape Gloucester, New Britain; 48 barges sunk by aircraft. Allied aircraft attacked Piræus harbour (again on 11th, 22nd, 28rd).
- 13.—Loss of H.M. destroyer Hurricane announced.

20.—Loss of H.M. destroyer Tynedale announced.

21.—Sinking of Japanese cruiser of Kuma class in approaches to Malacca Strait by British submarine announced.

22.—5th Army troops landed at Nettuno.

27.—Capture of Natamo (New Britain) by U.S. marines announced.

30.—Allied aircraft bombed Wake Island, Roi, Kwajalein, Taroa, Wotje;

U.S. warships bombarded Taroa and Wotje.

31.—Allied aircraft and warships attacked Kwajalein, Roi, Taroa, Wotje, Maloelap Ebeye. Mille, Jaluit and Wake bombed by shore-based aircraft.

### FEBRUARY.

- 1.—Allied warships bombarded Porto Recanati and Pedaso on Adriatic.
  Allied forces occupied atoll of Majuro (Marshalls).
- 2.—U.S. forces landed on Roi, Namur and Kwajalein (Marshalls).
- Allied aircraft attacked Rabaul (again on 4th, 8th, 11th, 12th, 14th, 17th, 18th, 27th), and Wewak (again on 4th, 12th). Loss of H.M. frigate Tweed announced.



4.—Sinking of 3 blockade runners in S. Atlantic by U.S. warships announced. U.S. warships and naval aircraft attacked Paramushir (Kuriles). Allied aircraft from Italy bombed Toulon. 9.—U.S.A.A.F. bombed Wake Island (and on 10th).

10.-U.S. warships and aircraft attacked Japanese-held atoll in Marshalls.

13.—Two German supply ships with naval escort sunk by light naval forces near Kristiansund.

14.—Loss of H.M. submarine Simoom announced.

15.—U.S.S.A.F. attacked Japanese convoy N.W. of New Ireland; 12 supply ships, 2 corvettes, 1 destroyer sunk. New Zealand and U.S. forces occupied Green Islands (Solomons). U.S. warships bombarded Rabaul and Kavieng.

17.-U.S. destroyers bombarded Rabaul and Kavieng; Kavieng again on 24th, 25th, Rabaul on 26th. U.S. forces landed on Eniwetok

atoll (Marshalls). Sinking of U.S. troopship announced.

17-18.—U.S. naval task force attacked Truk (Carolines); 201 aircraft destroyed, 2 light cruisers, 2 destroyers, 1 ammunition ship, 1 seaplane tender, 2 oilers, 2 gunboats, 8 cargo ships sunk. Later announced that 4 other ships and cruiser sunk.

18.—U.S. forces captured Engelia.

19.—Allied aircraft attacked Japanese convoy in Bismarck Archipelago:

6 merchant ships, 1 corvette, 2 gunboats sunk.

20.—Air-sea battle with U-boats near Gibraltar announced; 3 sunk, several damaged. Loss of H.M. destroyer Janus announced. U.S. forces captured Eniwetok; Marshall Islands now under U.S. control.

22.—U.S. destroyers sank 2 freighters, 1 destroyer, 9 barges N. of Bismarck Archipelago. U.S. naval task force attacked Saipan and Tinian Islands. U.S. aircraft attacked Guam.

24.—Loss of H.M. destroyer Hardy announced.

27.—British destroyer bombarded Vela Luka (Korcula Isl.) in Adriatic. Allied forces occupied Magine Islands (off Augusta Bay, Bougainville).

28.—U.S. naval aircraft bombed Wake Island.

29.—U.S. forces landed at Los Negros (Admiralty Islands).

### MARCH.

1.—Loss of H.M. destroyer Warwick announced.

- 2.—British submarine success in Far Eastern waters announced: Japanese aircraft carrier probably sunk, cruiser hit. U.S. naval aircraft raided Paramushir and Shimushu (Kuriles).
- 8.—Allied aircraft attacked Ponape and Kusaie (Carolines); Ponape

again on 5th, 18th, 22nd, 25th; Kusaie on 5th, 22nd. 5.—U.S. aircraft bombed Nauru in Pacific.

6.—Loss of H.M. destroyer Inglefield announced.

7.—U.S. control of Los Negros Islands announced.

- 9.—Allied shipping losses in February announced; second lowest of war. British destroyers bombarded Korcula Island (Adriatic).
- 10.—Light coastal forces sank enemy auxiliary and damaged tanker and escort vessel in Channel.

12.—U.S. marines occupied Wotho atoll (Marshalls).

18.—British and W. African troops landed on Japanese flank in Arakan. Allied landings on Hauwei and Butjolno (Admiralties), and on Bougainville (Solomons) announced,

- 14.—U.S. marines landed on New Britain, S.W. of Talasea. Loss of U.S. submarine Corvina announced.
- 15.—British light naval forces successes off Land's End and in Channel. U.S. forces landed on Manus Island (Admiralties).

17.—Loss of H.M. destroyer Mahratta announced.

U.S. aircraft sank 6 Japanese ships 70 miles E. of Hollandia. U.S. warships bombarded Mili (Marshalls).

19.—Loss of U.S. submarines Capelin and Sculpin announced. Sinking of 6 U-boats by H.M. warships in N. Atlantic announced. M.A.A.F. bombed submarine base at Monfalcone. U.S. forces landed on Emirau Island (St. Matthias group).

22.—Loss of U.S. submarine Scorpion announced.

23.—Loss of H.M. frigate Gould announced.

25.—U.S.A.A.F. bombed Onnekaton (Kuriles).

26.—Loss of H.M. corvette Asphodel announced.

- 28.—Allied aircraft bombed Hollandia (Dutch N. Guinea); again on 29th, 30th, 31st.
- 80-81.—Ú.S. warships attacked Palau Islands, sinking 28 ships and destroying 160 aircraft.

30.—R.A.F. torpedoed German liner (14,000 tons) off Norway.

#### APRIL.

- 1.—U.S. troops occupied Narilo and Koruniat Islands (Admiralties).
- 3.—Naval aircraft of Home Fleet damaged Tirpitz in Alten Fjord.

10.—Odessa captured by Russians.

11.—U.S. announced occupation of Ailuk, Rongelap, Likiep and Utirik atolls, and Mejit Island (Marshalls). U.S. naval aircraft bombed Paramushir, Shimushu, Shasutokan and Matsuma (Kuriles); again on 14th.

16.—Loss of H.M. destroyer Laforey announced.

 British carrier-borne aircraft attacked Sabang and Lho-Nga airfields in Sumatra.

20.—U.S. destroyer Lansdale sunk in Mediterranean.

22.—Allied troops landed at Hollandia (Dutch New Guinea). U.S. forces occupied Ungelap (Marshalls).

24.—M.A.A.F. aircraft damaged 2 destroyers and sank a corvette.

- 26.—German destroyer sunk off French coast. Carrier-borne naval aircraft attacked German convoy off Bodö.
- 29.—Destroyer action in Channel; 1 driven ashore, 1 damaged; H.M.C. destroyer Athabaskan sunk. Beached vessel destroyed May 7. U.S. carrier aircraft attacked Truk.
- 30.—U.S. warships and aircraft attacked Satawan (Carolines).

#### MAY.

1.—U.S. warships bombarded Ponape (Carolines).

2.—Sinking of Japanese destroyer by British submarines announced.

4.—Loss of H.M. submarine Stonehenge announced.

6.—Carrier-borne aircraft sank 2 supply ships off Kristiansund.

15.—Loss of H.M. Canadian frigate Valleyfield announced.

17.—U.S. forces landed at Wakde and Insoemanai Islands and at Arara (Dutch New Guinea). Carrier-borne aircraft attacked Surabaya, 10 ships sunk in harbour.

- 20.—U.S. carrier-borne aircraft bombed Marcus Islands; again on 21st.
- 22.—U.S.A.F. raided Kiel.
- 27.—U.S. forces landed on Biak Island (Schoultens).

#### JUNE.

- 4.—Australians landed at Karkar Island off Cape Croisilles.
- 5.—Loss of U.S. escort-carrier Block announced.
- 6.—Invasion of Normandy by British and Allied forces. Naval casualties, announced July 14, were: British destroyers H.M.S. Boadicea, Swift; frigates H.M.S. Mournet, Blackwood, Lawford; trawler H.M.S. Lord Austin; auxiliary H.M.S. Minster—Norwegian M.S. Svenner—U.S.A. destroyers Corry, Meredith, Glennon; transport Susan B. Anthony; minesweeper Tide; destroyer escort Rich; fleet tug Partridge. R.A.F. attacked German destroyers in B. of Biscay.

9.—Allied naval force entered Santo Stefano, abandoned by Germans.

Destroyer action off Ushant; 1 enemy destroyer sunk, 1 ashore,

2 damaged.

10.—U.S. task force attacked Japanese on Guam, Saipan and Tinian

13.—U.S. warships bombarded Matsuwa (Kurile Island) and started bombardment of Saipan which lasted until July 12.

Islands (Marianas); 13 enemy ships sunk, 16 damaged; 141 aircraft destroyed.

14.—Three enemy minesweepers sunk off Minquiers Rocks. R.A.F. attacked E-boat pens at Le Havre. U.S. carrier-based aircraft bombed Chichi and Haha Island (Bonins) and Iwojima in Volcano Islands; again on 23rd.

15.—Australian troops occupied Hansa Bay in N. Guinea. U.S. troops landed on Saipan Island. R.A.F. attacked E- and R-boats at

Boulogne.

17.—French forces landed on Island of Elba.

- 19.—U.S. carrier-borne aircraft attacked Japanese fleet between Luzon and Saipan; 14 ships sunk or damaged. 858 Japanese aircraft shot down in attack on U.S. fleet at Saipan.
- 20.—Loss of U.S. submarine Grayback announced.
- 21.—Allied carrier-borne aircraft attacked Port Blair in Andamans.
- 23.—Coastal forces sank 2 enemy ships, damaged 3, when trying to leave Cherbourg.
- 25.—Sinking of 5 U-boats during attack on Russian convoy announced.

26.—Cherbourg liberated.

U.S. warships bombarded Kurabu Zaki (Paramushiru)

#### JULY.

1.—Allied warships bombarded Noemfoor Island (Dutch N. Guinea).

3.—U.S. carrier-borne aircraft attacked Iwojima (Volcano Islands), Rota (between Guam and Saigan) and Hara (Bonin Islands); 3 Japanese destroyers sunk, on following day 5 ships sunk, many damaged. Two E-boats damaged in English Channel.

4.—British and Canadian naval forces intercepted R-boats operating from Le Havre; 2 sunk. German minesweeper sunk off Terschelling by light naval forces. U.S. forces captured Tanapag (Saipan's chief

harbour) and landed on Noemfoor Island (New Guinea).

5.—British naval and air attacks on enemy vessels off Dutch coast; armed trawler sunk, another and a landing craft damaged; two patrol vessels set on fire, hits on minesweeper, two supply ships set on fire, 8 escort vessels damaged. One British m.t.b. lost. U.S. forces captured Manim Island (off New Guinea). U.S. announced sinking of Japanese cruiser and destroyer. M.A.A.F. bombed Toulon (again on 9th and 11th).

6.—British submarine successes announced; 9 supply ships sunk in Far Eastern waters; another sunk in entrance to Puket Harbour (Siam) and shore installations bombarded at Lho' Seumawe (Sumatra) and on Ross Island (Andamans). H.M.C.S. Qu'Appelle set on fire 3 enemy trawlers off Brest. Sinking of U-boat in Atlantic by Canadian frigate Swansea announced. U.S.A.F. attacked Kiel (again on 23rd). 28 air attacks on E-boats in Channel area; 4 probably sunk, 9

damaged.

7.—U.S. aircraft attacked targets on Kyushu Island.

8.—Allied cruisers and destroyers bombarded Guam. 3 E-boats damaged off mouth of Seine. R.A.F. attacked convoy off Frisian Islands; 3 merchant ships, 3 escort vessels hit.

9.—British light coastal forces sank German armed trawler off Dutch

coast. Admiral Nimitz announced conquest of Saipan.

10.—British submarine successes in Mediterranean and Ægean announced; 2 transports, 1 tanker, 1 supply ship, 7 smaller supply ships; 2 Siebel ferries, 2 submarine chasers destroyed; tanker sunk in Toulon harbour.

11.—Loss of M.T.B. off French coast announced.

13.—Loss of British submarine H.M.S. Sickle announced. Further naval bases in course of invasion announced; 3 destroyers, 3 frigates, 1 trawler, 1 auxiliary sunk.

14.—Allied warships bombarded New Guinea coast between Yakamul and .

But.

15.—Loss of H.M. trawler Birdlip announced. Allied patrol vessels sank 2 enemy ships off French coast, one set on fire.

16.—Finnish warship Väinämöinen sunk by Russian A.F. Allied warships

bombarded Tinian Island in Marianas.

- 20.—Announced that German coastal batteries on Normandy coast shelled by H.M. monitor Roberts and H.M. cruisers Mauritius and Enterprise.
- 21.—Loss of U.S. submarines Trout and Tullibee announced.

U.S. forces landed on Guam.

22.—R.A.F. attacked Kiel.

23.—Hits scored on R-boats off Cap d'Antifer. U.S. forces landed on Tinian Island (Marianas).

25.—Allied warships bombarded Sabang (Sumatra).

- 27.—H.M. m.t.bs. attacked E-boats near Cap d'Antifer; one sunk, others damaged.
- 28.—British submarine successes in Far Eastern waters announced; 21
  Japanese ships sunk. R.A.F. attacked Hamburg.
- 29.—Allied land, sea and air forces raided Himara (Albanian coast).
  U.S.A.F. attacked Bremen.
- 30.—U.S. forces landed on Sansapor, N.E. of Sorong, and on Amsterdam and Middleburg Islands off Dutch New Guinea. M.A.A.F. mined Danube.

#### AUGUST.

- 2.—R.A.F. attacked Le Havre.
- 8-4.—U.S. carrier task force destroyed Japanese convoy in attack on Bonin and Volcano Islands.
- 4.—Sinking of U-boat off Atlantic coast of U.S. announced. U.S.A.F. attacked Kiel (again on 16th, 26th, 30th).
- 5.—R.A.F. attacked submarine pens at Brest.
- 6.—British naval forces sank enemy convoy (7 ships) off coast of Brittany, destroyed 2 escort ships near St. Malo, and damaged R-boats off Le Havre. R.A.F. attacked submarine pens at Lorient.
- 8.—R.A.F. attacked convoy off Norway; 5 ships set on fire. 3 minesweepers in Bay of Biscay set on fire.
- 9.—Allied aircraft bombed U-boat base at La Pallice. Enemy convoy intercepted off Corbière by P.T. boats; 2 enemy vessels hit. Two M-class minesweepers hit in roadstead of St. Helier; vessel sunk off Le Havre, escort vessel hit. Japanese resistance on Guam ceased.
- 10.—Sinking by U.S. submarines of 16 vessels, including 1 warship, in Pacific and Far East waters announced. R.A.F. attacked 5 merchant ships and 10 escorting Flak ships off Heligoland. Announced that over 500 U-boats sunk during war.
- 12.—H.M.C. destroyer sank 3 armed trawlers and supply ships off Pointe de Penmarch, Finisterre. Auxiliary vessel probably hit by M.T.Bs. off Le Havre. Armed m.s. sunk off La Rochelle by O.R.P. Piorun. Allied bombers attacked Brest (again on 17th, 24th, 25th, 28th). Recent transfer of U.S. Pacific Fleet H.Q. from Pearl Harbour to Saipan announced.
- 18.—Loss of H.M. destroyers Isis, Quorn; minesweepers Magic, Cato, Pylades; trawler Ganilly and A/S trawler Lord Wakefield during invasion operations announced.
- 14.—R.A.F. attacked warships in Gironde.
- 15.—Allied forces invaded France from Mediterranean. British success against enemy convoy near La Rochelle without casualties or damage.
- 16.—R.A.F. attacked minesweeper and armed coaster in Bay of Biscay, and bombed Stettin and Kiel.
- 17.—Sinking of tanker and obsolete French cruiser (Gueydon) in Brest announced.
- 18.—Germans at St. Malo surrendered.
- 19.—British light naval forces sank auxiliary vessel, damaged a mine-sweeper and set R-boat on fire near Cap d'Antifer. U.S. Liberator sank Japanese cruiser off Hong Kong. Sinking of enemy destroyer in Ægean by Greek submarine Pipinos announced.
- 20.—Toulon liberated.
- 22.—British naval aircraft attacked Tirpitz and other shipping in Alten Fjord; 19 vessels sunk or damaged; H.M. frigate Bickerton lost.
- 23.—Marseilles liberated by French troops.
- 24.—R.A.F. attacked E-boat shelters at Ijmuiden.
- 25.—Sea, land and air attack on Brest.
- 28.—Russian Black Sea fleet captured Tulcea and Sulina.
- 31.—Liberation of Bordeaux by F.F.I. announced.

#### SEPTEMBER.

1.—Dieppe captured by Canadians. Light naval forces and R.A.F. attacked enemy ships endeavouring to escape from French Channel ports.

U.S. warships bombarded Wake Island and other targets in Pacific;
 Japanese ships sunk. U.S.A.A.F. attacked Brest (again on 5th,

6th).

4.—Antwerp captured by British.

5.—Loss of H.M.C. corvette Alberni announced.

6.—Loss of U.S. submarine Rabalo announced. R.A.F. attacked Le Havre (again on 8th, 10th).

7.—R.A.F. attacked convoy off Frisian Islands, 4 vessels hit.

8.—Destruction of 100 German explosive motor boats in Channel since "D" day announced. Canadians occupied Nieuport and Ostend. U.S. carrier aircraft destroyed 52 ships off Minatuan Bay, Mindanao. German troopship Westfalen struck mine in Kattegat and sank.

9.—U.S. warships and aircraft attacked Wake Island.

 Canadians entered Zeebrugge. H.M.S. Warspite and Erebus bombarded Le Havre. U.S. carrier aircraft attacked Palau Islands; by

U.S. warships on 11th.

11.—R.A.F. set on fire 4 minesweepers off Christiansand. Destruction of German midget submarines by R.A.F. off Normandy. Destruction of Japanese convoy (52 ships) by U.S. carrier aircraft at Mindanao announced. U.S. warships bombarded Palau Islands.

12.—Loss of U.S. submarine Gudgeon announced. R.A.F. attacked convoy at Den Helder; damaged half-completed destroyer and set on fire 5 other ships. F.A.A. scored hits on supply ships and 3 "M" class

minesweepers off Norway. Le Havre captured by British.

13.—U.S. carrier aircraft bombed Cebu, Negros and Panay (Philippines). 14.—R.A.F. attacked convoy in Skagerrak; 4 vessels set on fire, escort

vessel destroyed. French fleet entered Toulon.

15.—R.A.F. attacked Tirpitz in Kaa Fjord. British submarine Ultor's successes in Mediterranean announced; 28 enemy ships sunk. U.S. forces landed in Palau Islands, and on Morotai Island (Moluccas).

16.—"Land Forces, Adriatic" landed on Kythera Island.

17.—Russian naval aircraft sank 3 transports, 3 submarines, during raid on Libau. U.S. landing on Angaua Island in Palaus announced.

18.—British light coastal forces sank 3 E-boats off Belgian coast. 1 E-boat hit off Frisian Islands. R.A.F. attacked Bremerhaven.

19.—R.A.F. attacked convoy in Norwegian fjord. Brest captured by U.S. forces.

20.—Loss of U.S. submarine Flier, minesweeper Perry and auxiliary transport Noa announced. R.A.F. attacked Calais.

20-21.—U.S. forces occupied Ulithi atoll (W. Carolines). U.S. carrier aircraft sank or probably sank 57 ships, damaged 46 ships, 2 floating docks, destroyed 357 aircraft in Manila area and southern Luzon.

23.—Russian air force sank 3 transports, 1 patrol vessel N.W. of Oesel. U.S. carrier aircraft sank 22 Japanese ships, damaged 43, at Visayan Islands.

24.—Russian warships captured Baltiski. R.A.F. attacked Calais.

25.—Loss of H.M. corvette Hurst Castle announced. U.S.A.A.F. sank 3 cargo ships off the Celebes.

28.—British submarines reported sinking 32 ships in Pacific. U.S. forces landed on Ngesebus and Kongauru Islands in Palaus. R.A.F. sank

torpedo-boat off Norway.

29.—Dutch submarine sank 2 ships off Java. U.S. aircraft sank 8,500 tons of shipping off N.W. Borneo, and damaged 10,000-ton tanker and freighter in Rafael Bay (Mindanao). Announced that in six days U.S. naval aircraft had sunk 13 ships, damaged 9, between the Philippines and the Celebes.

30.—Sinking of 5 self-propelled barges and 26 motor-boats at Vadsö by Russian air force announced. Calais surrendered to Canadian forces. U.S. marines landed on two islands in the Palaus. U.S.

aircraft sank 4 Japanese ships off N. Borneo.

#### OCTOBER.

1.—Aircraft attacked U-boat off Denmark and destroyer in Kiel Bay. F.A.A. set on fire 2 ships and British light coastal forces damaged convoy off Holland; 2 British m.t.bs. lost. Sinking of 37 ships and damage to 10 "recently" by Allied submarines operating between Arctic Circle and the Ægean announced. Destruction of 8,500 tons of shipping in Darvel harbour (N.W. Borneo) by U.S. naval aircraft announced.

2.—R.A.F. attacked convoy off Frisian Islands.

3.—Announced, in Australia, that during past week land and carrier aircraft had destroyed 190 Japanese warships and cargo vessels between New Ireland and Manila Bay.

4.—R.A.F. attacked U-boat base at Bergen; 3 U-boats sunk. Land Forces Adriatic landed at Patras and occupied port. U.S. aircraft

sank 10 ships off Philippines and in the Celebes.

5.—R.A.F. attacked Wilhelmshaven. U.S. submarines reported sinking of 11 ships, including 1 destroyer, in Pacific and Far Eastern waters. U.S. aircraft sank 2 Japanese ships in Gulf of Gorontalo.

6.—R.A.F. attacked Hamburg.

8.—U.S. warships bombarded Marcus Island. U.S. troops landed on

Garakayo Island.

9.—British light coastal forces sank 1 armed trawler, 1 minesweeper off Dutch coast. R.A.F. attacked Wilhelmshaven (again on 15th), and sank 2 ships and escort off Norwegian coast. U.S. aircraft sank or damaged 58 ships, destroyed 89 aircraft, in area of Ryukyu Islands (south of Japan).

Loss of H.M. destroyer Rockingham; minesweepers Loyalty, Britomart, Hussar; trawler Gairsay; auxiliary Fratton. U.S. troops

occupied Bairakaseru Island (Palaus).

10-16.—U.S. aircraft attacked objectives in Formosa, destroying over 900 aircraft and sinking many ships.

11.—Russian naval aircraft sank 26 German ships in Barents Sea.

13.—Russians captured Riga. Allied carrier aircraft attacked Japanese at Luzon (continued until 17th).

14.—British naval aircraft hit 2 supply ships, set on fire 2 anti-aircraft ships off Norway. R.A.F. attacked Hamburg (again on 22nd).

15.—British naval force landed at the Piræus. R.A.F. set on fire tanker and Flak ship in Skagerrak, destroyed armed trawler off Frisians

and attacked Hamburg and Wilhelmshaven. U.S. forces captured

Nyulu atoll (south of Yap).

16.—U.S. aircraft sank Japanese cruiser and probably sank destroyer in S. China Sea, and 2 tankers, 3 freighters and 1 large vessel near Kowloon docks.

17.—U.S. carrier aircraft sank 2 transports and set on fire 5 ships in Philippine waters. Announced that U.S. warships in Pacific had sunk 33 more Japanese ships including 3 destroyers, 3 escort vessels, 1 minelayer, 8 transports, 1 tanker, 1 naval auxiliary and 16 cargo ships. Sinking of Japanese transport, in September, in Pacific announced; British P.O.W. rescued.

17-18.—Allied warships and aircraft attacked objectives on Car Nicobar and Nancowry Islands.

18.—British naval party occupied island of Scarpanto. Santorin island surrendered to H.M.S. Ajax.

19.—R.A.F. attacked shipping off Norway.

20.—U.S. forces landed on Leyte; during naval operations which continued until October 26 the Japanese losses were 2 battleships, 4 aircraft carriers, 6 heavy cruisers, 2 light cruisers and some destroyers sunk; 1 battleship, 3 heavy cruisers, 2 light cruisers, 7 destroyers severely damaged; 6 battleships, 4 heavy cruisers, 1 light cruiser, 10 destroyers damaged; U.S. losses were aircraft carrier Princeton, escort carriers Saint Lô and Gambier Bay, destroyers Johnston and Hoey, destroyer escort Samuel B. Roberts. H.M.A.S. Australia damaged.

21.—German steamer struck mine and sank off Gothenburg.

22.—Bombardment of the Nicobars by British warships announced. Sinking (during past few months) by British submarines in Far Eastern waters of 1 Japanese cruiser, 5 large supply ships, 9 medium supply ships, 9 small supply ships, 60 small supply craft and naval auxiliaries; 7,000-ton aircraft carrier probably sunk; another Japanese cruiser torpedoed.

23.—Loss of U.S. submarines Golet and Herring announced. R.A.F. attacked shipping off Norway; 2 merchant vessels and escort set on fire, 2 flak ships hit. U.S. carrier aircraft attacked Japanese

warships in Philippines.

24.—Japanese aircraft attacked U.S. shipping in Leyte Gulf.

25.—British destroyers sank tanker and armed trawler near St. Nazaire.

B A E attacked Hamburg (again on 80th)

R.A.F. attacked Hamburg (again on 80th).

26.—U.S. carrier aircraft sank 1 Japanese destroyer and severely damaged a light cruiser in the Camotes Sea; 1 U.S. aircraft carrier damaged. Allied warships bombarded Melos; Piskopi (off Crete) occupied.

27.—Allied warships shelled targets on coast near Genoa (again 28th, 29th).

28-29.—U.S. warships probably sank 1 heavy cruiser, damaged 2, during attacks at Manila harbour.

29.—R.A.F. attacked Tirpitz near Tromsö, and U-boat pens at Bergen.

30.—R.A.F. sank 6 ships, damaged 21 off Bödö (south of Lofoten Islands).
F.A.A. forced U-boat ashore at Bödö and damaged shore depots.

31.—Sinking of 18 more Japanese vessels by U.S. submarines in Pacific and Far Eastern waters announced.



#### NOVEMBER.

1.—Allied warships sank 3 German destroyers in Adriatic. British light coastal forces attacked convoy off Holland. Destruction of 20 Japanese barges at Ormac by U.S. carrier aircraft announced.

2.—Zeebrugge captured by British. Allied aircraft attacked shipyard

and airfield at Vinh, in Gulf of Tongking.

8.—Flushing captured by British.

 Loss of H.M. sloop Kite and sinking of 3 U-boats, damage to others, during voyage of convoy to and from Russia announced. R.A.F.

attacked Hamburg (again on 6th).

5.—U.S. aircraft bombed Singapore and attacked 2 Japanese destroyers, 9 transports in harbour at Chichi Island. U.S. aircraft damaged 1 Japanese heavy cruiser, 1 light cruiser, 3 destroyers in raid on Manila and S. Luzon; 1 submarine chaser sunk off Lubang Island.

6.—Danish ferry boat, captured by patriots, taken to Swedish port. Sinking of 3 U-boats and loss of H.M. sloop Kite in Arctic waters

announced.

7.—Announced that Ægean practically cleared of enemy shipping.

8.—U.S. warships and aircraft attacked Iwojima.

9.—H.M. cruiser Argonaut arrived Salonika. October Allied shpping losses announced as lowest of war. German news agency reported cessation of U-boat building.

10.—U.S. submarine successes in Pacific announced; Japanese light cruiser, a seaplane tender, 3 medium cargo vessels, 1 tanker sunk.

11.—British submarine successes in Far Eastern waters announced;
45 Japanese ships sunk. U.S. aircraft sank 4 Japanese transports,

5 destroyers, 1 destroyer escort in Ormoc Bay.

12.—R.A.F. sank Tirpitz in Trömso fjord. Allied warships (led by H.M. cruiser Kent) sank 9 ships, 1 driven ashore, off Norway. U.S. carrier aircraft damaged Japanese light cruiser, exploded 2 destroyers, sunk or left blazing 11 other vessels and hit floating dock in Manila Bay area, and destroyed 4 large transports in Ormoc Bay.

13.—Destruction (by crew) of stranded U.S. submarine Darter announced. 14.—Allied destroyers bombarded enemy positions at Bar (Montenegro).

15.—U.S. aircraft sank more than 30 Japanese barges off Ormoc. Allied forces landed on Pegun (Mapia group). British submarine successes in S. Pacific announced; 28 coastal supply vessels, 1 naval auxiliary sunk.

17.—Japanese ship losses since Pearl Harbour announced as 829 warships, 3,136 other vessels sunk or damaged. Of these 377 warships and

1,741 other ships were sunk.

18.—Allied aircraft damaged shipping and oil installations at Tarakan and naval base at Brunei Bay (N.E. Borneo). U.S. aircraft sank 2 Japanese merchant ships, set 12 on fire, near Manila.

18-19.—U.S. aircraft sunk 2 torpedo-boats, 9 barges off Leyte Island.

20.—U.S. announced loss of 1 destroyer, 2 destroyer escorts, 7 other craft in S.W. Pacific. Sinking of 2 Japanese torpedo-boats, 4 barges, 1 fuel lugger in Ormoc Bay announced.

21.—U.S. warships bombarded Matsuwa (Kuriles). U.S. aircraft raided

Hamburg.

22.—Announced that 4 Japanese troopships destroyed or damaged near Ormoc.

23.—U.S. aircraft destroyed 4 Japanese ships off Leyte, including a destroyer. Loss of H.M. trawler Colsay announced.

24.—U.S. carrier aircraft sank 20 Japanese ships, including a heavy cruiser and a destroyer in Luzon area. Sinking of 8 German destroyers, 2 tankers off Oesel Island announced.

25.—Three Japanese ships sunk off Cebu.

26.—Sinking of 27 Japanese ships, including a destroyer and a converted gunboat, by U.S. submarines in Far Eastern waters announced.

27.—Japanese aircraft attacked U.S. warships in Leyte Gulf.

28-29.—Three Japanese destroyers and 10 other ships sunk off Leyte.

30.—Antwerp port opened to traffic. Sinking of 4 Japanese transports, 1 destroyer and cargo ship set on fire off Leyte by U.S. aircraft, announced.

#### DECEMBER.

- 2.—U.S. destroyer sunk in Ormoc Gulf; 1 Japanese destroyer sunk, 1
- 8.—British warships and aircraft attacked U-boat base on Lussin Island, near Fiume.
- 4.—Sinking of 20 Japanese ships by U.S. submarines in Far Eastern waters announced.
- 5.—Loss of 2 U.S. minesweepers of Central Pacific Fleet and motor torpedo-boat in Philippines announced. British cruiser bombarded Rhodes harbour.
- 7.—Destruction of 13 Japanese ships by U.S. aircraft off Leyte announced. U.S. destroyer Mahan and destroyer transport Ward, damaged, and later sunk, by own forces.

U.S. warships and aircraft attacked Iwojima (Volcano Islands).

- 10.—U.S. aircraft attacked Hong Kong harbour and Kowloon docks. 11-12.—U.S. aircraft sank 3 Japanese transports and 3 destroyers N.W. of Leyte, 1 destroyer, 2 transports on fire.
- 12.—British naval aircraft attacked anchorage at Ulee Lhoe (Sumatra).
- 15.—U.S. forces landed on Mindoro.

R.A.F. attacked U-boat pens at Ijmuiden.

- 17.—U.S. destroyers Hull, Spence and Monaghan lost in typhoon off Luzon.
- 18.—Sinking of 28 Japanese ships, damage to 66 by U.S. warships and aircraft attacking Luzon, and sinking of 33 Japanese ships, 12 of them combat vessels, by U.S. submarines announced. R.A.F. attacked Gdynia harbour.
- 19.—Loss of U.S. tanker Mississinewa in Central Pacific, and sinking of 41 Japanese ships and small craft, damage to 61 by U.S. aircraft in Luzon area between 13th-15th announced.
- 22-23.—British light forces sank 2 E-boats, 2 probably sunk, 5 damaged off mouth of Scheldt.
- 26.—U.S. warships and aircraft bombarded Iwojima (Volcano Islands). U.S. aircraft sank 3 Japanese destroyers, damaged battleship and cruiser off Mindoro.
- 27.—Sinking of 27 Japanese ships, including 1 large aircraft carrier, 1 converted light cruiser, 1 destroyer, by U.S. submarines in Pacific waters.

- 28.—Loss of U.S. submarine Seawolf announced.
- 29.—R.A.F. attacked E-boat and R-boat pens at Rotterdam.
  30.—U.S. aircraft sank or damaged 5 Japanese cargo ships, 2 destroyers,
  1 destroyer escort in Lingayan Gulf, and attacked objectives on Wake Island and on Woleai (Carolines). 31.—U.S.A.A.F. attacked submarine assembly yard at Hamburg.

### BRITISH AND FOREIGN NAVIES.

#### PRINCIPAL OFFICIALS.

On January 1, 1945.

#### GREAT BRITAIN.

#### Board of Admiralty.

Board of Admiralty.

First Lord.—The Right Honourable A. V. Alexander, C.H., M.P.

First Sea Lord and Chief of Naval Staff.—Admiral of the Fleet Sir A. B. Cunningham, Bart., G.C.B., D.S.O.

Deputy First Sea Lord.—Admiral Sir Charles E. Kennedy-Purvis, K.C.B.

Second Sea Lord and Chief of Naval Personnel.—Vic-Admiral Sir A. U. Willis, K.C.B., D.S.O.

Third Sea Lord and Controller.—Vice-Admiral Sir W. F. Wake-Walker, K.C.B., C.B.E.

Fourth Sea Lord and Chief of Supplies and Transport.—Vice-Admiral A. F. E. Palliser, C.B., D.S.C.

Fifth Sea Lord and Chief of Naval Air Equipment.—Vice-Admiral D. W. Boyd, C.B., O.B.E., D.S.C.

Vice-Chief of Naval Staff.—Vice-Admiral Sir E. N. Syfret, K.C.B.

Assistant Chiefs of Naval Staff.—Rear-Admiral J. G. C. Dundas, Q.B.E.

Rear-Admiral W. R. Patterson, C.B., C.V.O.

Financial Secretary.—James P. L. Thomas, M.P.

Parliamentary Secretary.—Lord Bruntisfield, M.C.

Civil Lord.—Captain R. A. Pilkington, M.C., M.P.

Controller of Merchant Shipbuilding and Repairs.—Sir James Lithgow, Bart., M.C., T.D.

Permanent Secretary.—Sir Henry V. Markham, K.C.B., M.C.

(See page 324 for later changes).

(See page 824 for later changes).

#### FOREIGN POWERS.

Country.	Minister of Marine.	Chief of Staff.
Argentina	Rear-Admiral A. Teisaire	Vice-Admiral H. Vernengolima.
Brazil	Vice-Admiral Henrique Aristides Guilhem	Vice-Admiral Vicira de Mello
Bulgaria	Major-Gen. Velchev (Minister of War)	· · · · · · · · · · · · · · · · · · ·
Chile	Gen. A. Carrasco	Vice-Admiral Vicente Merino B. (Cin-C. Ashore)
China	Admiral Ch'en Shao-K'uan (Cin-C. Naval Forces)	Vice-Admiral Ch'en Hsin-yung
Colombia	Dr. Gonzalo Restrepo (Minister for War)	
Cuba	S. Menendez Villoch	Commodore J. Aguila Ruiz
Denmark	Vice-Admiral H. Rechnitzer (Chief of Naval Defence and Director of the Naval Minis- try)	Commodore C. Hammerich
Ecuador	<u> </u>	_
Finland	General Rudolf Wallden (Minister of Defence)	Rear-Admiral Lundmann
France	M. Jacquinor	Vice-Admiral A. G. Lemmonier
Germany	Adolf Hitler (Supreme Commander of the Armed Forces)	Gross-Admiral Doenitz (Commander-in-
Greece	Gen. Nikolaos Plastiras	Admiral Petros Voulgaris (Cin-C. Fleet)
Hungary	-	
Theles	Adminst de Courter	
Italy	Admiral de Courten Admiral Mitsumasa Yonai	Admiral the Duc d'Aosta
Japan Mexico	General Jara	Admiral Kushiro Oikawa
** ** *	It Admired I To Promotore (Minister of	Commodore Malpica
	Lt. Admiral J. T. Furstner (Minister of Naval Affairs)	The state of the Land of the L
Norway	Oscar Torp (Minister of Defence)	Rear-Admiral E. Corneliussen (Cin-C.)
Peru	Rear-Admiral Fedirgo Diaz Dulanto	Rear-Admiral L. N. McNair, U.S.N.
Poland	Vice-Admiral J. Swirski (Chief of Polish	Capt. T. P. Morganstern
Portugal	Navy) Captain Américo Deus Rodrigues Tomaz	Vice-Admiral Alfredo Botelho de Sousa
		(Major-General of Armada) Rear-Admiral António Garda de Sousa
Rumania	Gen. Negelescu (Minister of War)	Ventura (Chief of Naval Staff)
grunname	Gen. Megerescu (Ministel Of Wal)	Rear-Admiral Roman August (Under-
Soviet Union .	Admiral Kuznetsoff (People's Commissar)	Secretary of State for Navy) Admiral Isakov
Spain	Vice-Admiral Salvador Moreno Fernandez	Vice Admirel A Amient Admirel
	Total Contract Months Total Contract Co	Vice-Admiral A. Arriaga Adam, Vice-Admiral C. Gonzalez-Aller Acebal (C
Sweden	T. E. Skold (Secretary of State for Swedish	in-C. Naval Forces afloat)
	Defence Forces)	Vice-Admiral Fabian Tamm (Cin-C.)
Thailand	Vice-Admiral Sin Kamon Nawin (Minister of Defence)	Captain Tahasu Kham Hiran, (Cin-C.)
Turkey		Admiral Suku Okan (Cin-C.)
United States .	James V. Forrestal (Secretary of the Navy)	Admiral B. T. Winn 10 to 0 miles
	• •	Admiral E. J. King, (Cin-C., Chief of Naval Operations)
Uruguay	General Alfredo Campos (Minister of Nat. Defence)	Rear-Admiral Gustano Schroeder
Venezuela	0-1136136	Captain Picardi
Yugoslavia	Marshal Tito (Minister of War)	Captain Ivan Kern
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#### BRITISH AND FOREIGN NAVAL ATTACHES.

On January 1, 1945.

#### BRITISH NAVAL ATTACHÉS ACCREDITED TO FOREIGN COUNTRIES.

Argentine To	Name. Captain H. A. Forster, M.V.O., R.N.	Appointed. June, 1942	Headquarters. Buenos Aires
	Assistant, Pay - Commander Lloyd-Hirst, R.N.	Ap <del>r</del> il, 1940	,,
Uruguay	Commander S. H. Smiles, O.B.E., R.D., R.N.R.	Dec., 1942	Montevideo
Brazil	Captain R. A. Wilson, D.S.O., R.N.	Jan., 1941	Rio de Janeiro
	Assistant, Commander C. H. Pullen, R.N.V.R.	Oct., 1939	
Venezuela, Colombia, Ecuador, Hayti, Do- minican Republic.	Captain H. Boyes, C.M.G., C.I.E., R.N.	Dec., 1942	Bogota"
Chile, Peru	Captain A. C. W. Domvile, R.N.		Santiago
	Assistant, Commander F. V. Vaughan, R.N.V.R.	Aug., 1939	"
Portugal	Rear-Admiral F. C. Bradley	March, 1944	Lisbon
	Assistants, Lieutenant-Com- mander K. M. Graham, R.N.V.R.	June, 1944	**
	Lieutenant F. B. Stilwell, R.N.V.R.	Sept., 1943	**
Spain	Captain M. H. Scott	May, 1944	Madrid
	Assistant, Commander S. A. Gomez-Bears, R.N.V.R.	Nov., 1940	,,
Sweden	Captain H. M. Denham, R.N.	May, 1940	Stockholm
	Assistant, Lieutenant H. D. G. Harris, R.N.V.R.	Nov., 1941	**
Turkey	Rear-Admiral W. L. Jackson, D.S.O.	Jan., 1942	Ankara
	Assistants, Commander G. R. Scott, R.N.	Dec., 1943	11
	Commander (E.) F. L. Tewkes- bury.	Sept., 1944	**
	Lieutenant-Commander G. B. Mares, R.N.V.R.	April, 1940	Istanbul
U.S.A., Panama, Cuba, Mexico, Guatemala,	Captain E. M. C. Abel Smith, R.N.	Sept., 1944	Washington
Honduras, Nicaragua, Costa Rica and Salva- dor.	Assistant, Captain (E.) L. E. Rebbeck, R.N.	Feb., 1943	**
(Above countries except Panama and Cuba.)	Assistant, Lieutenant P. H. B. Otway-Smithers, R.N.V.R.	Nov., 1940	Mexico City
China	Captain E. W. Billyard-Leake, D.S.O., R.N.	Aug., 1944	Chungking

## FOREIGN NAVAL ATTACHÉS ACCREDITED TO GREAT BRITAIN.

Argentine: Captain Ricardo Lopes Campo.

Belgium: Lieutenant-Colonel of the Military Aviation, L. F. E. Wouters, C.B.E., M.C. Brazil: Post vacant.

Chile: Captain Señor Don Roberto Gillmore.
China: Captain Chow Ying-teung.
Denmark: Captain Preben Lemboke (also Air Attaché).
France: Rear-Admiral G. Thierry d'Argenlieu (Flag Officer Commanding French Naval Forces in Great Britain and Head of Naval Mission).

Greece: Commander D. Zepos, R.H.N.
Mexico: Señor Teniente de Fragata Alfredo Marquez Ricano.
Netherlands: Captain C. Moolenburgh, D.S.O. (Acting Naval Attaché).

Norway: Captain J. E. Jacobsen, R. Nor. N., O.B.E.

Peru: Commander Alfredo Sousa.

Poland: Commander Tadeusz Stoklasa, Polish Navy, O.B.E.

Portugal: Post vacant.

Soviet Union: Major-General C. Stukalov (Acting Naval Attaché). Spain: Lieut.-Commander Señor Don Mariano Urzaiz, Duke of Luna. Sweden: H.R.H. Prince Bertil—Duke of Hallaud, R.S.N. (acting).

Turkey: Captain Aziz Ulusan. U.S.A.: Rear-Admiral George B. Wilson, U.S.N.

Uruguay: Post vacant.

Yugoslavia: General de Division Milorad M. Radovitch.

#### ADDENDUM.

On August 4th, 1945, after the change of Government in the United Kingdom, the Board of Admiralty was reconstituted as follows:

First Lord.—The Right Honourable A. V. Alexander, C.H., M.P.
First Sea Lord and Chief of Naval Staff.—Admiral of the Fleet Sir A. B. Cunningham, Bart., K.T., G.C.B.,

D.S.O.

Deputy First Sea Lord.—Admiral Sir C. E. Kennedy-Purvis, K.C.B.

Second Sea Lord and Chief of Naval Pers.mel.—Vice-Admiral Sir A. U. Willis, K.C.B., D.S.O.

Third Sea Lord and Controller.—Vice-Admiral Sir W. F. Wake-Walker, K.C.B., C.B.E.

Fourth Sea Lord and Chief of Supplies and Transport.—Vice-Admiral Sir A. F. E. Palliser, K.C.B., D.S.C.

Fifth Sea Lord and Chief of Naval Air Equipment.—Rear-Admiral T. H. Troubridge, C.B., D.S.O.

Vice-Chief of the Naval Staff.—Vice-Admiral Sir E. N. Syfret, K.C.B.

Perliamentary and Financial Secretary.—J. Dugdale, M.P.

Civil Lord.—W. J. Edwards, M.P.

Controller of Merchant Shipbuilding and Repairs.—Sir J. Lithgow, Bart., G.B.E., M.C., T.D

Permanent Secretary.—Sir H. V. Markham, K.C.B., M.C. D.S.O.

## PICTORIAL SECTION

# PICTORIAL SECTION SILHOUETTES OF WARSHIPS

## CAPITAL SHIPS.

[In order to facilitate identification, the ships are arranged in accordance with the number of funnels and masts, as these are the features most easily distinguished at a distance. Dimensions and particulars of British and foreign warships will be found on pp. 197–300. All the profiles are drawn to the scale \( \frac{1}{2} \) in. = 100 ft.]

[An Index to the names of vessels of which profiles are included in this section

are given at the end of the volume.]



SWEDEH. Battleship. Gecar II.
(A searchlight is fitted on each mast.) Mainmast removed.



UNITED STATES. Battleships. Iowa, Missouri, New Jarsey, Wisconsin.



UNITED STATES. Battlochips. Washington, North Caroling.



GREAT BRITAIM. Battle-cruiser. Renown.

Forward superstructure modified.
Fore topmast and topgallant mast fitted.
The after funnel is the same size as forward funnel.
Tripod mainmast replaced by polemast, and main topgallant mast removed.



GREAT BRITAIN. Battlechips. King George V., Duke of York, Howe, Anson.
Tripod mainmast.



JAPAN. Battleships. Mutsu, Magato.
Single funnel fitted and catapult added between mainmast and "X" turret.
Superstructure built round mainmast.
Bridgework modified.
Main topgallant mast removed.



#### JAPAN, Battlechips. Ice, Hyuga.

Fore funnel and topmast removed.
Bridgework modified.
Superstructure built round mainmast.
Main topgallant mast removed.



JAPAN. Battleships. Kirishima, Kongo. Kongo has funnels of equal height. Derricks fitted between X and Y turrets.



CHILE. Battleship. Almirants Latorra. (Modernised 1931—mainmast raised and bridge work altered.) Catapult fitted on quarter deck.



UNITED STATES. Battleships. California, Colorade, Maryland, Tennessee, West Virginia.

(Now fitted with 2 catapults, one on "X" turret and one on the quarter deck.)

Crane fitted at stern.

Maryland has range-finder fitted on B turret.



ITALY. Battleships. Conte di Cavour, Giulio Cesare, Andrea Doria, Calo Duilio. Tripod mainmast removed in Doria.



ARGENTINA. Battleships. Moreno, Rivadavia.
Guns on B and X turrets replaced by range-finders.



FRANCE. Battleships. Lorraine, Provence.

Note.—Lorraine has been modernised. The midships turret has been removed and replaced by a hangar and catapult. Cranes fitted abreast after funnel. Bridgework extended. Fore topmasts removed, main topmasts fitted.



FRANCE. Battleships. Courbet, Paris (operated by the Free French).

Cranes fitted abreast after funnel. After funnel reduced in height. Range-finder fitted on B turret.



BRAZIL. Battleships. Minas Geraes, São Paulo.

Forward funnel removed and bridgework modified. Remaining funnel made larger. Polemast and range-finder fitted abaft funnel.



SOVIET UNION. Battleships. Marat, Paris Commune and October Revolution.

Two derricks fitted between mainmast and turret in Marat and Paris Commune.

Crane fitted abreast mainmast in October Revolution.



GREAT BRITAIN. MEattleships. - Nelson, Rodney Nelson has a crane amidahips. Rodney has a catapult fitted on C turret. Mast structure increased.



**GERMANY.** Battleship. Tirpitz.



FRANCE. Battleships. Dunkerque, Strasbourg.
Catapult fitted on quarter deck. Crane is moved aft to break of deck.
Main topgallant mast fitted.



JAPAM. Battleships. Fuzo and Yamashiro. (After reconstruction, 1984.) A.A. guns fitted abreast mainmast.



GREAT BRITAIN. Battleship. Malaya.

NOTE.—Catapult fitted before mainmast; Derrick on mainmast removed.
Hangar and cranes fitted abreast funnel.



GREAT BRITAIN. Battleships. Warspite, Queen Elizabeth, Vallant. Sternwalks fitted in Warspite and Queen Elizabeth.



UNITED STATES. Battleships. New York, Texas.

Fore topmast removed; Mastheads modified and fitted with machine-guns, Range-finder fitted on B and X turrets.



GREAT BRITAIN. Battleships. Ramillies, Resolution, Revenge, Royal Sovereign.

NOTE.—Resolution has a smoke deflector on the funnel. Ramillies and Resolution have tripod mainmasts, a catapult on "X" turret and a crane abreast

Main topgallant mast fitted. Fore topmast removed.



UNITED STATES. Battleships. Idaho, Mississippi, New Mexico. (After modernisation, 1934.)



UNITED STATES. Battleship. Pennsylvania.

Catapult on "X" turret added. Crane fitted at stern. Main topmast is on fore side of mast structure.



UNITED STATES. Battisships. Nevada, Oklahoma. Bridgework extended and mastheads modified.



UNITED STATES. Battleehip. Arkansas.



GERMANY. Armoured Ship. Admiral Schoor.



**CERMANY.** Armoured Ship. Lutzow (ex-Doutschland).

Polemast fitted on aft side of funnel. Catapult fitted abaft funnel.

Fore topmast fitted.

Polemast fitted on after superstructure.

Cranes fitted in lisu of derricks.

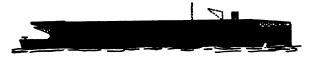


**GERMANY.** Battle-cruiser. Gneisenau. Vertical stemplece.



UNITED STATES. Battleships. Alabama, Indiana, Massachusetts, South Daketa.

# AIRCRAFT AND SEAPLANE CARRIERS AND TENDERS.



GREAT BRITAIM. Aircraft Carrier. Argus. (Training Ship.)
Flight deck levelled forward and extended aft.



GREAT BRITAIM. Aircraft Carrier. Furious.

Three wireless masts added each side of flight deck.
Quarter deck has been raised one deck.
Deck forward has been levelled and sides blanked off.
Superstructure, polemast and spotting top fitted amidships.



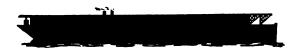
GREAT BRITAIN. Aircraft Carriers. Illustrious, Victorious, Formidable, Indomitable.



FRANCE. Alcoratt Carrier. Biarn.

Space between flight deck and upper deck forward partially blanked off.

Framework fitted on aft side of funnel.



UNITED STATES. Aircraft Tender. Langley.
Foremost third of flight deck removed.
Two pole masts fitted.
Bridge and Derricks fitted forward.



UNITED STATES. Aircraft Carrier. Saratoga.



UNITED STATES. Aircraft Carrier. Ranger. (NOTE.—Funnels hinge outboard.) Signal masts fitted at ends of flight deck.



UNITED STATES. Aircraft Carrier. Enterprise.



JAPAN. Aircraft Carrier. Hosho. Funnels hinge outboard.



JAPAN. Aircraft Carrier. Ryujo.



JAPAN. Aircraft Carrier. Koryu.



SWEDEN. Aircraft Cruiser. Getland



**LTALY.** Sespiane Carrier. Miraglic.



GREAT BRITAIM. Scapiane Carrier. Abatross. Catapult fitted forward.



FRANCE. Aviation Transport. Commandant Teste.



JAPAN. Sceplane Carrier, Hotore.

### CRUISERS AND COAST DEFENCE SHIPS.



JAPAM. Gruisers. ("Sendai" class.) Haka, Sendai, Hutsu.

Catapult fitted abaft mainmast. Aircraft platform forward removed.

The mainmast is of tripod construction and is fitted with a derrick on its after side.



UNITED STATES. Scout Cruisers. ("Omaha" class.) Cincinnati, Concerd, Detroit, Marbiehead, Memphis, Milwaukee, Omaha, Raleigh, Richmand, Trenton.

There are small differences in the arrangement of guns aft. Topmasts shortened.



ROYAL AUSTRALIAN MAVY. Cruiser. Adelaide.

Forward funnel removed and superstructure modified.



ITALY. Light Cruiser. Taranto (ex-German Strassburg).
Forward funnel removed.



GREAT BRITAIM. Gruisers. ("Lendon" class.) Devenshire, Lendon, Sussex. ("Morfolk" class.) Norfolk. Pore topgallant mast added.

ROYAL AUSTRALIAN NAVY. Cruiser. Shropshire.



QREAT BRITAIN. Gruisers. ("Kent" class.) Cumberland, Suffolk, Kent, Berwick.

Kent has a sternwalk. Kent and Berwick are flush-decked.

ROYAL AUSTRALIAN NAVY. Cruiser. ("Kent" class.) Australia. No hangars fitted.



QREAT BRITAIN. Cruisers. (" E" class.) Emerald, Enterprise. In Enterprise the forward 6-in. guns are in a twin mounting on the fore-castle deck,



JAPAN. Light Cruisers. ("Kuma" class.) Kies, Kitakami, Kuma, Oi, Tama. ("Materi" class.) Isudzu, Materi, Nagara, Yura, Kinu, Abukuma.

Cataputi fitted before mainmast. The mainmast is of tripod construction and is fitted with a derrick on its fore side.

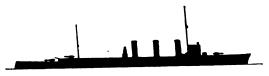
Bridgework modified and anti-flare tops fitted to funnels.



SOVIET UNION. Cruiser. Profintern. (Now Krasny Krym).



JAPAN. Light Cruisers. ("Tenryu" class.) Tatsuta, Tenryu.



SPAIN. Light Cruiser. Mendez Nuñez.

Foremast is tripod. Fore topgallant mast added, A.A. armament fitted between second funnel and mainmast. Searchlight platform fitted round after funnel.



GREECE. Cruiser. Avereff.



ITALY. Scout Cruiser. Quarto.



JAPAN. Cruisers. (" Machi " class.) Machi, Myske, Ashipara, Hagure. Catapuit fitted abaft mainmast.



JAPAN. Cruisers. ("Atage" class.) Takae, Atage, Chekai, Maya.



ITALY. Cruiser. (Modified "Trento" class.) Belzane.

Forward superstructure faired into funnel. Catapult fitted amidships.

Clinker screens fitted to funnels. After funnel same as forward funnel.



ITALY. Cruiser. ("Zara" elass.) Gerizia.

Forward superstructure faired into funnel. Catapult fitted forward. Clinker screens fitted to funnels.

Range-finder fitted abaft after funnel.



JAPAN. Cruisers. ("Furutaka" class.) Furutaka, Kato.
The tops of the funnels are square to the funnels.
Polemast raked.



JAPAN. Cruisers. ("Furutaka" class.) Aoba, Kinugasa. The tops of the funnels are square to the funnels.
Polemast raked.



GREAT BRITAIN. Cruiser. (Improved "Southampton" class.) Belfast.



GREAT BRITAIN. Cruisers. ("Southampton" class.) Newcastle, Sheffield, Birmingham, Glasgow, Liverpool.



FRANCE. Cruisers. ("Duquesne" class.) Duquesne, Tourville. ("Suffren" class. Suffren, Colbert, Foch, Dupleix.

Colbert, Dupleix and Foch have tripod mainmasts and the catapults between the funnels.

Fore topmast shortened in Foch, Duquesne and Tourville and removed in Dupleix and Colbert.



UNITED STATES. Cruisers. ("Astoria" class.) New Orleans, Minneapolis, San Francisco, Tuscaloosa. Forward funnel fitted with clinker screen.



UNITED STATES. Cruisers. Portland, indianapolis.
Foremost funnel and fore topmast are raised.



UNITED STATES. Cruisers. ("Pensacola" class.) Sait Lake City, Pensacola. Crane fitted on fore side of after funnel and derricks on after side.



UNITED STATES. Cruisers. ("Chester" class.) Northampton, Chester, Louisville. ("Augusta" class.) Augusta.

Fore topmast shortened.



UNITED STATES. Cruiser. Wichita.



UNITED STATES. Cruisers. Bolsa, Brocklyn , Honolulu, Mashvilla, Philiadelphia Phœnix, Savannah, St. Louis.



FRANCE. Training Cruiser. Jeanne d'Arc.
The catapults and fore topmast are removed.



FRANCE. Gruisers. Jean-de-Vienne, La Gailesonntère, Marselliaise, Giotre, Montealm, Georges Loygues. Catapuit fitted on after turret.



ROYAL AUSTRALIAN NAVY. Cruiser. (Modified "Leander" class.) Hobart. Catapult fitted between funnels.



GREAT BRITAIM. Cruisers. ("Fiji" class.) Coylon, Jamaica, Gambia, Uganda, Konya, Mauritius, Rigeria,



GREAT BRITAIN. Cruisers. ("Arethusa" elass.) Arethusa, Penelepa, Aurera. Derrick fitted on aft side of after funnel.



GREAT BRITAIN. Gruisers. (" Dide" class.) Clospatra, Dide, Euryaius, Seylla, Sirius.



GERMANY. Light Cruiser. Köin.
Polemast fitted on aft side of after funnel. Catapult fitted between funnels.



FRANCE, Cruiser Minelayer. Emilé Bertin.

Derrick fitted on fore side of catapult.

Searchlight platform built round after funnel.

Small mast fitted on fore side of after turret.



ITALY, Cruisers. ("Condettieri" class.) Mentecuccell, Muzie Attendole.



ITALY. Gruisers. ("Attendele" class.) Eugenie di Savoia, Filiberte Duca d'Accta.



ITALY. Cruisers. ("Condettieri" ciasa.) Alberice de Barbiane, Alberte di Giussane.
Fore topmast and stays to mainmast removed.
Derrick fitted on fore side of mainmast. Bridgework extended.



ITALY. Cruisers. ("Condottieri" class.) Armando Diaz, Luigi Caderna.

Fore topmast removed. Catapult fitted between after funnel and "X" turret.

Derrick fitted on fore side of mainmast.



ITALY. Cruisers. Duca degli Abruzzi Guiseppe Garibaidi.



ITALY. Cruiser. Bari (ex-German Piliau).



GREAT BRITAIM. Cruiser Minelayer. Adventura. (Stern has been extended.)
Derricks added abreast masts.



NETHERLANDS. Cruiser. Sumatre.

Fore topmast shortened and foremast made larger.
Mainmast shortened, moved forward and fitted with derrick and searchlights.
Aircraft stowed between funnels and crane fitted.



ITALY. Cruiser. ("Trente" class.) Triests.
Fore topmast removed.
Bridgework extended.



SPAIM. Cruisers. Galicia, Almirante Cervera, Miguel de Cervantes. The mainmaste are tripods. Fore topmast and topgallant mast removed.



SPAIM. Cruiser. Navarra (ex-Republica).



GERMANY. Light Cruicer. Emden.

Polemast fitted on aft side of after funnel.
Superstructure added before mainmast. Fore topmast shortened.
Mainmast shortened and surmounted by a searchlight platform.



FRANCE. Gruisers. ("Duguay-Trouin" class.) Lamette Picquet, Duguay-Trouis.
Primanguet.
Catapult fitted on quarter deck.
Fore topmast removed and mast head modified.



ARGENTINA. Cruiser. La Argentina.



GREAT BRITAINLI Cruisers. ("D" class.) Danae, Dauntiess.
Main topmast added.



GREAT BRITAIN. Cruisers. ("D" class: repeat vessels.) Delhi, Dunedin, Diemeda, Despatch, Durban.
Foremost gun in Diemede is housed in a gunhouse.
Topmasts removed.



GREAT BRITAIN. Cruisers. ("Cores" class.) Cardiff, Cores, Guracos.



GREAT BRITAIN. Anti-Aircraft Cruisers. ("Carlisie" class.) Colombo, Capetown. Tripod mainmast.



QREAT BRITAIN. Cruiser. Carlisie. Topmast removed.



GREAT BRITAIN. Cruisers. ("Caledon" class.) Caledon, Caradoc. Mainmast lengthened.



**SOVIET UNION.** Cruiser. Krasni Kavkaz. Catapult fitted between mainmast and funnel. A.A. guns fitted between funnels.



SWEDEM. Coast Defence Ship. Qustav V.
Fore topmast added. Bridgework enlarged.
Mainmast and derrick removed.



SWEDER. Coast Defence Ship. Sverige.



SWEDEN. Coast Defence Ship. Drottning Victoria.



JAPAN. Cruisers. Suzuya, Kumano, Tone, Tikuma.



SPAIN. Cruiser. Canarias. Masts removed.



FRANCE. Cruiser. Algérie.

Superstructure amidahips added.

Crane replaced by two others.



GERMANY. Cruiser. Admiral Hipper.



GERMANY. Light Cruiser. Leipzig.

Polemast fitted on aft side of funnel. Catapult fitted between funnel and foremast.

Crane fitted on fore side of funnel. Fore topmast shortened.



GERMANY. Light Cruiser. Nurnberg.



GREAT BRITAIN. Gruisers. ("Leander" class.) Leander, Achilles, Orion, Ajax,



NETHERLANDS. Cruiser. Tromp.



ARGENTINA. Cruisers. Almirants Brown, Vinticines de Maye.
Fore topmast shortened, main topmast lengthened.
Detrick fitted on fore side of mainmast.
Searchlight platform fitted on mainmast.
Superstructure built on aft side of mainmast.



JAPAN. Light Cruiser. Yubari.

Masts and funnel raked aft.



FINLAND. Armoured Gunboats. Vainamõinen, Ilmarinen.



MORWAY. Minelaying and Training Ship. Clay Trygvason. Both cranes are fitted abreast mainmast.



GREAT BRITAIM. Cruisers. Frobisher, Hawkins. . Second funnel added.



DENMARK. Cruier. Niels Juel.

# FLOTILLA LEADERS AND DESTROYERS

(See pp. 259-300.)



FRANCE. Flottila Leeders. Cassard, Vauquelin, Kersaint, Tartu, Le Chovalier Paul, Alpie, Albatres, Epervier, Milan, Gerfaut, Vautour.



Flotilia Leaders Valmy, Verdun. Lion



UNITED STATES. Destroyers. The "Flush Deck" type; all U.S. destroyers except these with three funnels.

Mainmast shortened.
Also, Great Britain—"Town" class-



Flotifia Leaders. Tigre,

Lynz.
Platform added before after turrets.
Léopard and Lynx are under the control of the Free French.



ANCE. Destroyers. Simoun, Tempite, Trembe, Ternado.

POLAND. Destroyer. Burza is Mainmast shortened. similar.



ANCE. Flotifia Loaders. "Le Fantasque" eless. L'Audecleux, Le Malin, Le Terrible, Le Triumphant, L'Indomitable.

Control platform added abaft after funnel. Le Triumphant is under the control of the Free French.



LY. Destreyers. Gen. A. Cantere, Ge A. Chinotto, Gen. A. Papa, Gen. A. Cascin Gen. M. Prestinari, Gen. C. Meetana A. Bassini, E. Cosenz, F. Stecce, G. Caris G. Medici, G. ia Farina, G. ia Mass, Strtott, M. Fabrizi. ITALY.

Bridgework extended.



GERMANY. Destroyers.



GREAT BRITAIM. Destroyers. "Tribal" class Pole mainmast.



YUGO SLAVIA. Flotilia Londor. Dubrovnik.



JAPAN. 1st Class Destroyers. "Fubuid" elass. (28 ships.)



iTALY. Fielilia Leaders (Scouts). "Navigatori" class. (11 ships.)
Mainmast lengthened.



GREAT BRITAIN, Flotilla Leader. Short pole mainmast.



GREAT BRITAIN. Fletilla Leader. Faulkner. Pole mainmast.



AN. 1st Class Destroyers. "Mutsuid" class (12 ships), and "Kamikase" class (9 ships). JAPAN.



JAPAN. ist class Destroyers. "Minekase" class (15 ships).



Welf, GERMANY. RMANY. Destroyers, Hills, W Luchs, Jaguar, Leopard, Sees Albatres, Kondor, Falks, Möws,



GREAT BRITAIM. Destreyers. "Acasta," "Defender" and "Acasta," and "Crusader" classes have

davits at stern.

Fiotilia Leaders. Duncan, Kempenfeit.



GREAT BRITAIM. Destroyers. "Greyhound,"
"Hero" and "Introdid" classes.
Mainmast shortened.



PORTUGAL Destroyers. Vouga, Lima, Dao, Tejo, Deuro. COLOMBIA. Destroyers. Antioquia, Caldas.



ARGENTINA. Fiotilia Leaders. Mendeza, La Rioja, Tucuman.



ITALY. Fletifia Leaders (Scouts). Mirabello, Auguste Ribety. Carlo



GREAT BRITAIN. AIM. Fletilia Leaders. Campbell, Mackay.

ROYAL AUSTRALIAN NAVY. Fieldia Leafer.

SPAIN. Flotille Loaders. etc., generally similar. Almiranto Valdes.



METHERLANDS. Destroyers. Plet Helm, Banckert, Van Nes.



GREAT Van BRITAIN



GREAT BRITAIN. Destroye Whitshed, Witherington, Wi Worcester, Wishart, Witch.



GREAT BRITAIN. Destroyers. Amazon.



CHILE. Destroyers. Serrano, Orella, Riquelme, Hyatt, Vidella, Aldes. Mainmast heightened.



SWEDEN. Destroyers. Kias Hern, Kias Uggia, Ehrensköld, Nordenskjeld. Davit fitted at stern,



JAPAM. 2nd Class Destroyers. "Wakatako" class (7 ships), and "Kaya" stass (19 ships).



ITALY. Destroyers. Q. Sella, F. Crispi.

Bridgework extended. Platform fitted round mainmast.



UNITED STATES. Destroyers. "Mahan"



SOVIET UNION. Destroyers, "Loningrad"



JAPAN. Destroyers. "Hibiki" class.



JAPAN. Destroyers. "Ariake" elass (6



GREAT BRITAIM. Fietilia Leader. Faulkner. Destreyers. "Eslipse" and "Fearless" classes similar but gun between funnels omitted.



QREAT BRITAIN. Destroyers. Admirally "8"



ITALY. Desireyers. San Selferine. Martine. Bridge and foremost funnel heightened.



ITALY. Destroyers. Turbine, Euro, Ostro, Bridge and foremost funnel heightened.



DENMARK. Torpedo Boats (1st Class). Gientin Hogen, Ornen, Laxen, Dragen, Hvalen.



UNITED STATES. Destroyers. "Benson'



UNITED STATES. Destroyers. Dunlap, Fan-



UNITED STATES. Destroyers. Grayson, Eberie, Plunkett, Keerney, Gwin, Meredith, Livermore, Monssen, Woolsey, Ludiew, Edison, Ericseon, Wilkes, Nicholson, Swanson, Ingraham, Fletcher, Radford, Jonkins, La Valietta, Nicholsa, O'Bannon, Chevaller, Percival.



WITED STATES. Destroyers. "Farragut"



GREAT BRITAIN. Destroyers. "Javelin" and "Kelly" classes.



QREAT BRITAIN. Destroyers. "Hunt" class.



UNITED STATES. Deciroyers. "Henry"



POLAND. Destroyer. Biyskawica.



SOVIET UNION. Destroyers. "Stremittein!"



UNITED STATES. Destroyers. "Somers"



ITALY. Destroyers. Darás, Freccia, Strale, Sastia, Folgore, Lampe. Bridgework extended. Control platform fitted between torpedo tubes.



UNITED STATES. Destroyers. "Gridley" class.



QREECE. Destroyers. Spotzal and Coundouriotis.

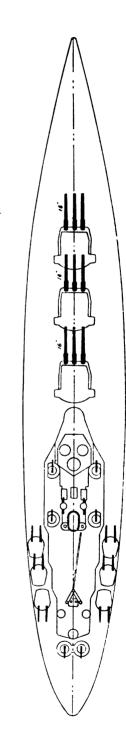
# PLANS AND ELEVATIONS OF WARSHIPS Anson. PICTORIAL SECTION Length 745 ft.; 35,000 tons; Completed 1941-42. Howe. GREAT BRITAIN. BATTLESHIPS. Duke of York. King George V.

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**P27** 

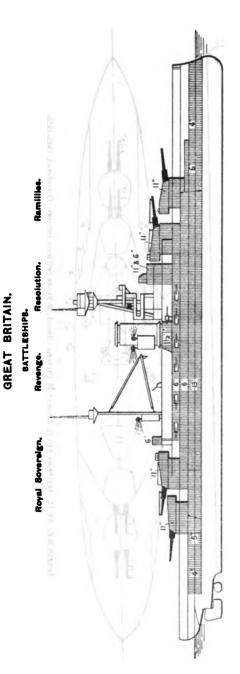
Armament, 10-14-in.; 16-6'25-in; 6 m.p.p.; 4 Aircraft; Catapult.

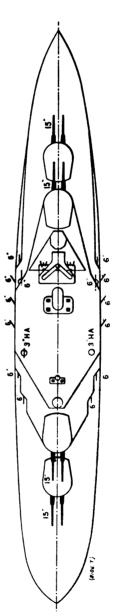




NOTE.—A 14-is, waterline armour belt extends from approximately the foremost 16-in, turret to approximately the aftermost 6-in, turret. The turret armour varies from 16-in, to 9-in.

Correction to plan.—Mast structure increased. Nelson has a sense amidablys. Rodney has a catapult on "0" turret. Length (extreme), 710 ft.; 38,960 tons; Speed, 22 knote; Completed, 194 Armament, 9—16-in.; 19—6-in.; 6—47-in. A.A.; 6—2-pr. Fom Foms; 11 L.; 5 M.; 2—24-in. sub.

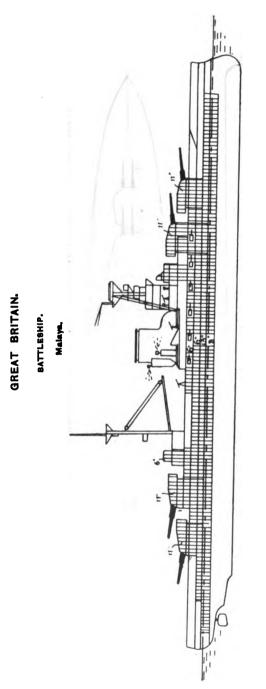


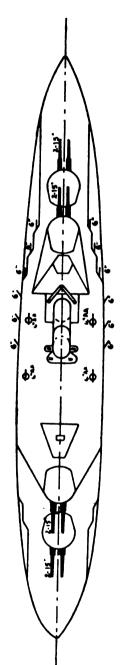


Longth (extreme), 620 ft. 6 ing. 2: Langth B.P., 589 ft.; 29,150 tons; Speed, 23 knots (without bulges); Completed, 1916-17.

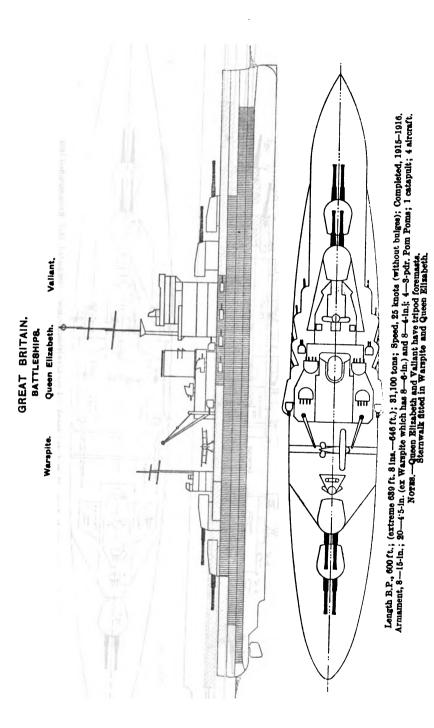
Armament, 8—15-in.; 12—6-in.; 8—4-in. A.A.; 4—3-pr.; 5 M.; 11 L.; 9—2-in. submerged torpedo tubes in Revenge. Revenge and Ramillies have Corrections to plan, -Searchlights on mainmast and the superstructure & in guns now removed. The 4-in. A.A. guns are fitted on the superstructure instead of the 3-in, H.A. shown. Fore topmast removed. Main topgallant mast fitted.

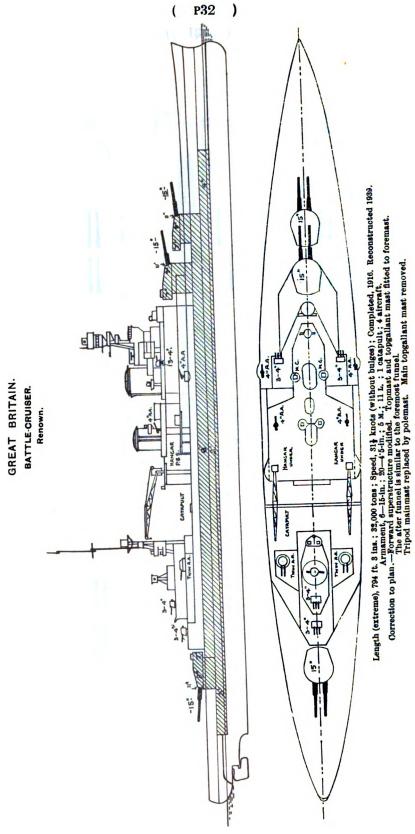
Resolution and Ramillies have tripod mainmasta, a catapult on "X" Turret and a crane abreast the mainmast, and carry 1 sircraft each.
Resolution has clinker screen fitted to funnal. • Revenge, 625 ft. 9 in.



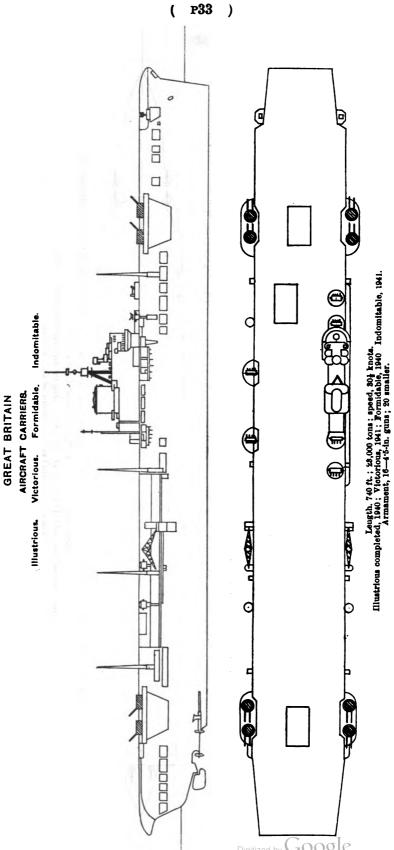


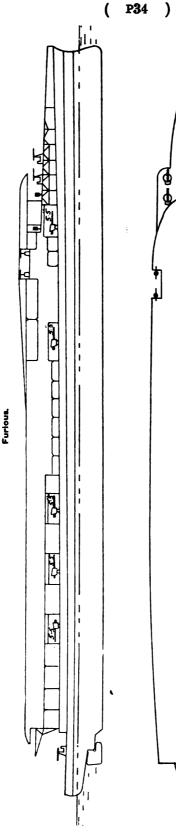
Correction to plan. Add main topgallant mast, catapult before mainmast, a hangar and crame each side abreast funnel. Derrick removed. Length B.P., 600 ft. ; (extreme 640 ft. 8 ing.); \$1,180 tons; Speed, \$5 knote (without bulges); Completed, 1915-1916, Armament, 8-15-in; 12-6-in; 8-4-in. A.A.; 4-8-pr.; 5 M.; 11 L.; 1 catapult; 1 afroraft.





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GREAT BRITAIN. AIRCRAFT CARRIER.

Length (extreme), :86 ft. 6 ins. ; 23,450 tons; Speed, 30 knots; Completed as a cruiser, 1917; Conversion to aircraft carrier completed, 1926. Armament, 12-4-in.; 4-2-pr.; 46 smaller; 83 aircraft

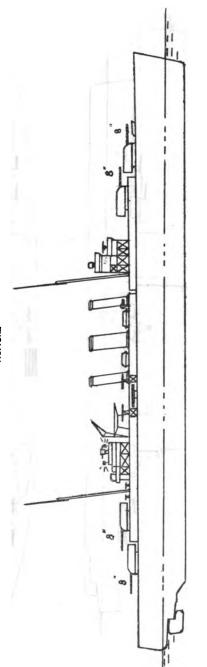
Three wireless masts added each side of flight deck. Quarter deck has been raised one deck.

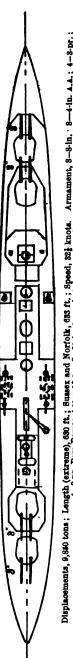
Top deck forward has been levelled off and closed in.

Superstructure, polemast and spotting-top fitted amidships on the starboard side.

Single mounts shown replaced by twins.



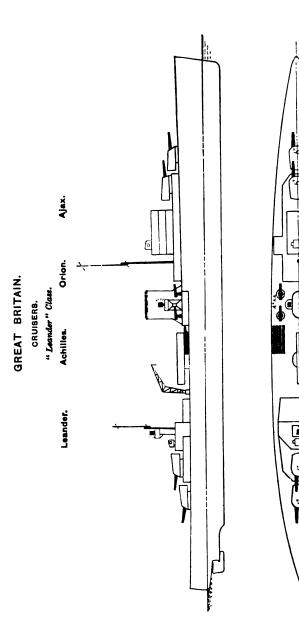




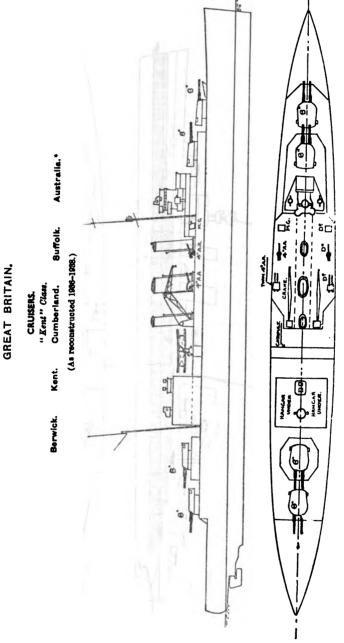
Displacements, 9,880 tons; Length (extreme), 630 ft.; Susers and Norfolk, 633 ft.; Speed, 52½ knots. Armament, 8—8-in. 8—4-in. 4.A.; 4—8-pr.; 4—8-pr.; 4—7 in. 1.0 L.; 8—8-in. 10 L.; 8—8-in. 10 L.; 8—1 knorft; incatabilit.

• In Norfolk the seaplane orane and the 4—4-in. gua are slightly forward of the positions shown.

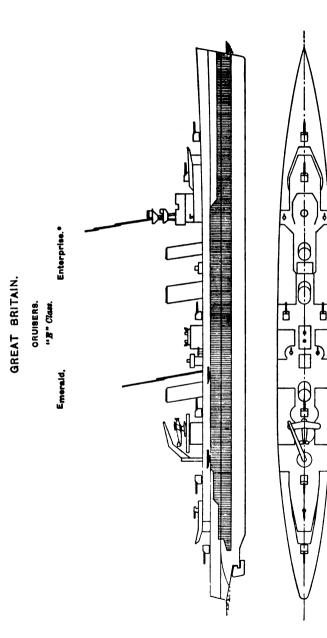
Fore topgallant mast added. Fore and main masts are tripod.



Oisplacement, 6,985-7,270 tons; Length (extreme), 554 ft. 6 ins.; Speed, 324 knots. Armament, 8-6-in., 8-4-in. A.A., 4-3-pr. 8 torpedo tubes. Leander and Achilles are attached to New Zealand division and have I aircraft. Masta are now of tripod type.

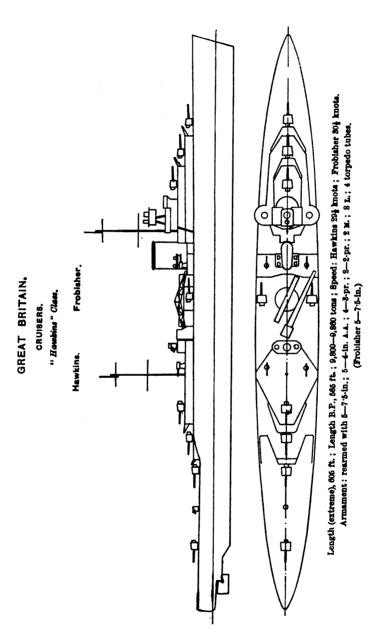


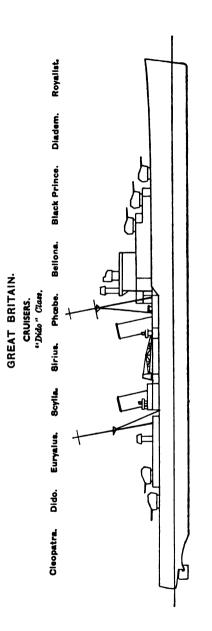
Length (extreme), 630 ft.; 10,000 tons; Speed 514 knots; Completed 1928. Armament, 8-8-in.; 8-4-in. A.A.; 1 catapult; 3 aircraft. Kent, Australia, Cumberland and Suffolk have I sircraft; Cumberland and Suffolk have 6-4-in. A.A. · Royal Australian Navy. Australia is not provided with hangars Norre-Berwick, Kent and Australia are flush-decked.



Length (extreme), 570 ft.; Length B.P., 536 ft.; Emerald, 7,560 tons; Enterprise, 7,680 tons; Speed, 30 knots. Armament, 7-6-in.; S-4-in. A.A.; 4-3-pr.; 2-2-pr. Pom Poms; 7 smaller; 8-21-in. torpedo tubes.

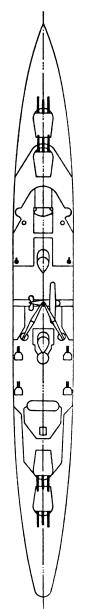
* In Enterprise the two forward 6-in. guns are mounted in a twin mounting on forecastle deck.





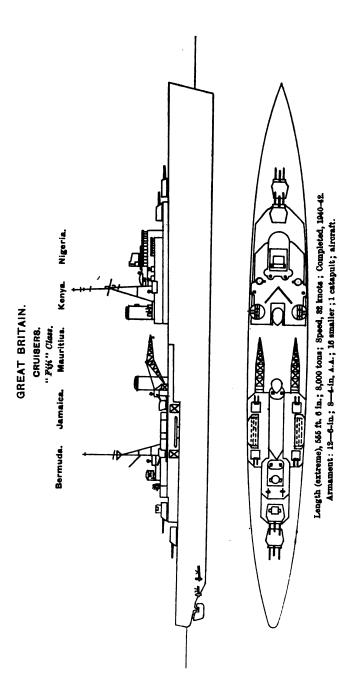


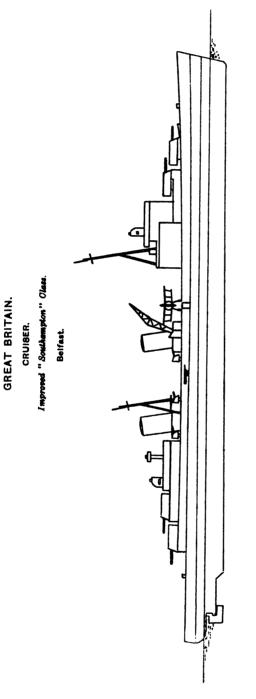
Newcastle, Sheffleld, Birmingham, Glasgow, Liverpool. " Southampton " Class. CRUISERS.

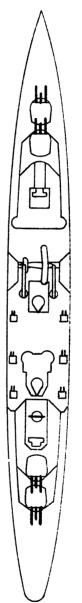


Length (extreme), 501 ft. 6 ins.; 9,100 tons (Liverpool 9,400 tons;) Speed, 32 knots; Completed, 1937-38.

Armament, 12-6-in.; 8-4-in. A.A.; 6-21-in. torpedo tubes; 1 catapuit; 3 aircraft.

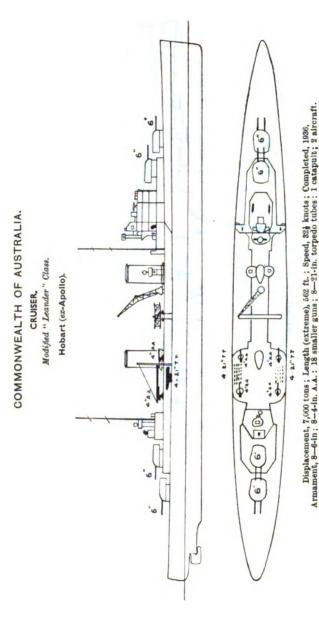


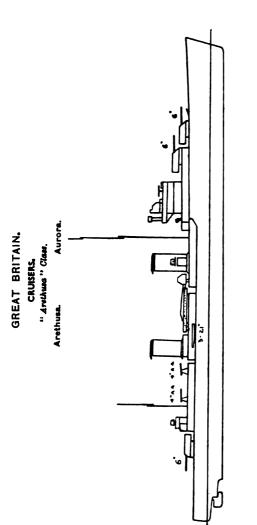


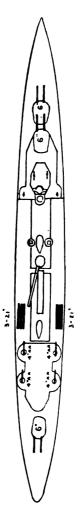


Length (extreme), 613 ft. 6 ins.; 10,000 tons; Speed, 32‡ knots; Completed, 1939. Arnament 12—6-in.; 12—4-in. A.A.; 20 smaller guns; 6 torpedo tubes.

(







Displacement, 6,220-6,270 tons; Length (extreme), 606 ft.; Speed, 334 knots; Completed 1985-57.

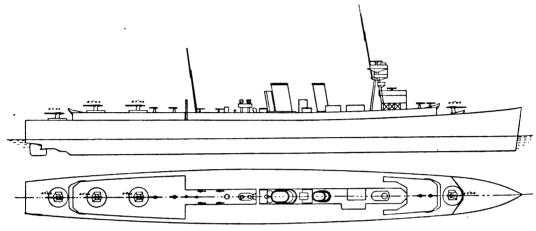
Armament, 6-6-in.; 4-4-in. A.A.; 9 smaller; 2 triple 21-in. torpedo tubes.

4-in. mountings, are twins in Aurora.

Masta are of tripod type.

#### CRUISER MINELAYER:

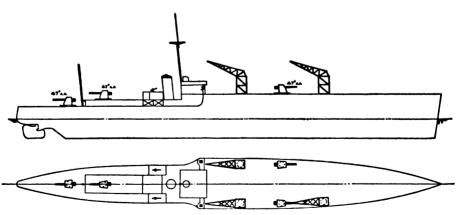
Adventure.



Length (extreme), 589 ft.; Length B.P., 500 ft.; 6,740 tons; Speed, 28 knots. Armament, 4-4·7·in. A.A.; 4-3-pr.; 4-2-pr.; many smaller A.A.; 310 mines. Stern has been lengthened and rounded in plan. Derricks added abreast masts.

## SEAPLANE CARRIER.

Albatross.

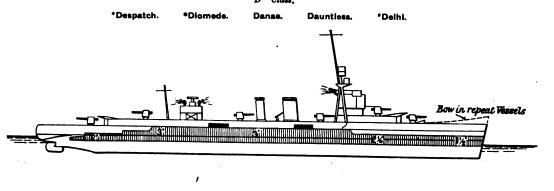


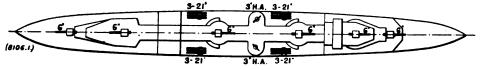
Length, 443 ft.; 4,800 tons; Speed, 21 knots; Completed, 1929.

Armament, 4-4'7-in. A A.; 4-2-pr. Pom Poms; 4-3-pr.; 4 M.; 20 L.; 9 seaplanes.

Catapult fitted forward.

CRUISERS.





Length, 4724 ft.; 4,850 tons; Speed, 29 knots; Armament, 6—6-in.; 3—4-in. A.A.; 4—3-pr., 2—2-pr.; 2 M.; 8 L.; 12—21-in. torpedo tubes.

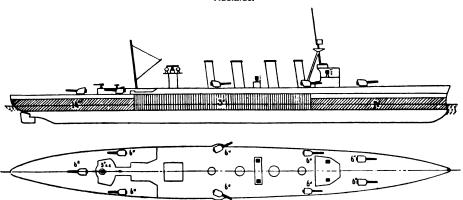
Main topmast fitted. Foremost gun in Diomede housed in gunhouse.

· Repeat vessels.

#### COMMONWEALTH OF AUSTRALIA.

CRUISER.

Adelaide.



Length, 462† ft.; 5,100 tons; Speed, 25† knots; Completed, 1922.
Armament, 8—6-in.; 3—4-in.; 4—3-pr.; 8 L.
Forward funnel removed and superstructure modified.

CRUISERS.

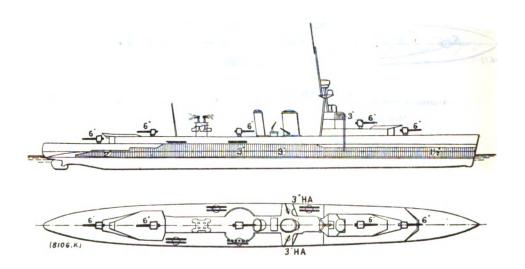
"Ceres" Class.

Ceres.

Curacoa.

Cardiff.

"Carlisle" Class.
Carlisle.



Length (extreme), 450 ft.-451 ft. 9 ins.; Length B.P., 425 ft.; 4,200-4,290 tons; Speed, 29 knots; Completed, 1917-23.

Armament, 5—6-in.; 2—3-in. A.A.; 4—3-pr.; 2—2-pr. Pom Poms; 4 above-water 21-in. D.R. torpedo tubes.

Carlisle and Curacoa, 8—4-in. A.A.; 1 M.P.P.; 2 M.G.; 8 L.

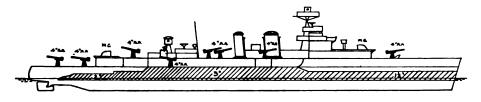
Carlisle has a trawler bow.

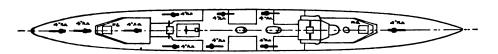
#### CRUISERS.

"Ceres " Class.

#### Capetown and Colombo

Converted to Anti-Aircraft gun ships.



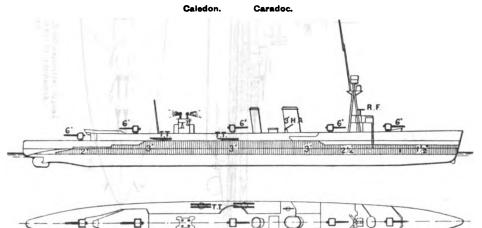


Length (extreme), 4512 ft.; 4,290 tons; Speed, 29 knots; Completed, 1917.

Armament, 8—4-in. A.A.; 1 M.P.P. (4-in. guns in twin mountings, not singles as shown).

#### CRUISERS

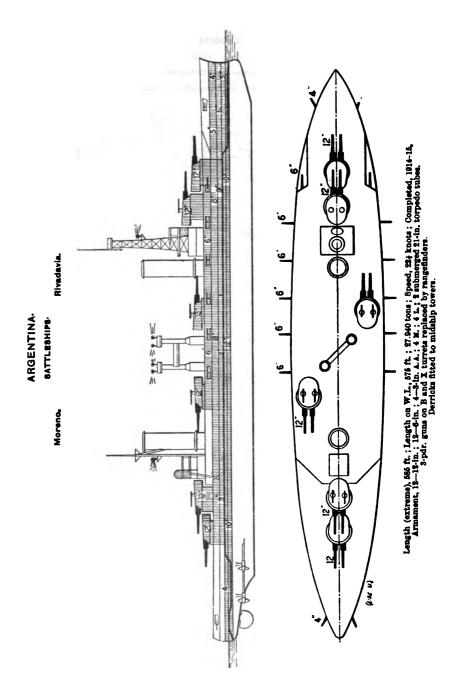
" Caledon" Class.



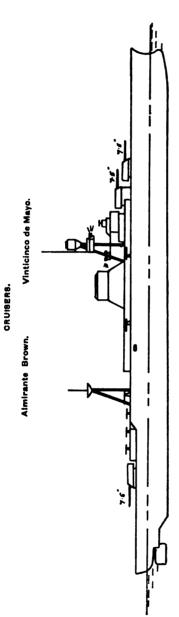
Length (extreme), 450 ft.; Length B.P., 425 ft.; 4,180 tons; Speed, 29 knots; Completed, 1917.

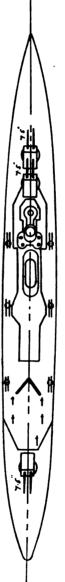
Armament, 5—6-in.; 2—3-in. A.A.; 4—3-pr.; 2—2-pr. Pom Poms; 2 M.; 8 L.; and 4 above-water 21-in. D.R. torpedo tubes.

Mainmast lengthened.



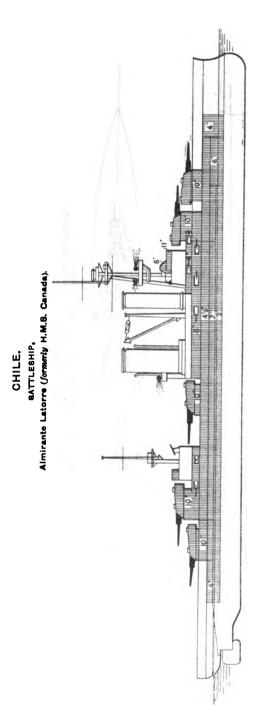
ARGENTINA.

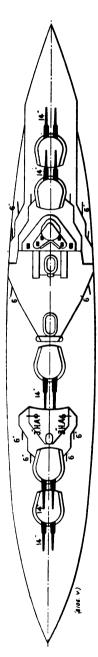




Length (extreme), 546g ft.; 6,466 tons; Speed, 32 knots. Completed, 1931. Armament, 6-7'6-In; 12-4-In.A.; 6 Fom Poms; 6-21-in. torpodo tubes;

Corrections to plan.—Fore topmast shortened. Main topmast lengthened. Derrick fitted on fore side of mainmast. Searchlight fitted on mainmast. Superstructure built aft side of mainmast.





Length (attreme), 661 ft.; Length B.F., 625 ft.; Standard Displacement, 28,960 tons: Speed, 23 knota; Completed, 1975; Modernised at Devonport Dockyard, 1929-31.
Armament, 10-14-in.; 14-6-in.; 4-1-3-in.; 4 submerged 21-in. torpedo tubes; 1 catapult. During modernisation main topmast has been raised and bridge platforms extended. Catapult fitted on quarter deck.

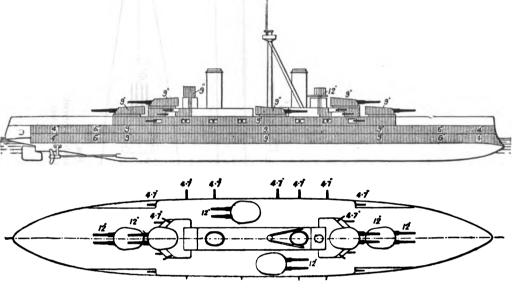
( P53 )

#### BRAZIL.

BATTLESHIPS.

Minas Geraes.

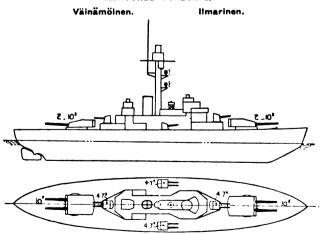
São Paulo.



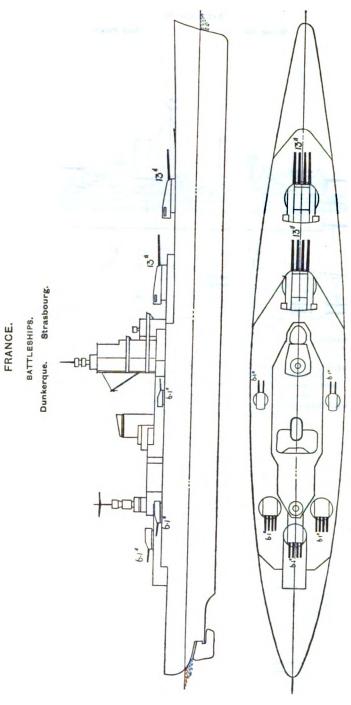
Length (extreme), 541 ft.; Length B.P., 500 ft.; 19,200 tons; Speed, 21 knots; Completed, 1909, 1910.
Armament, 14—12-in.; 14—47-in.; 2—3-pr.; 4—3-in. A.A.; 8 M. A.A.
Overhauled and refitted at Brooklyn Navy Yard, 1921-22, and A.A. guns installed.
Corrections to plan.—Ten main deck 47-in. guns removed in 1931.
Forward funnel_removed, bridgework modified; 47-in. guns and 3-in. A.A. guns added.
Polemast and rangefinder fitted abatt funnel.

## FINLAND.

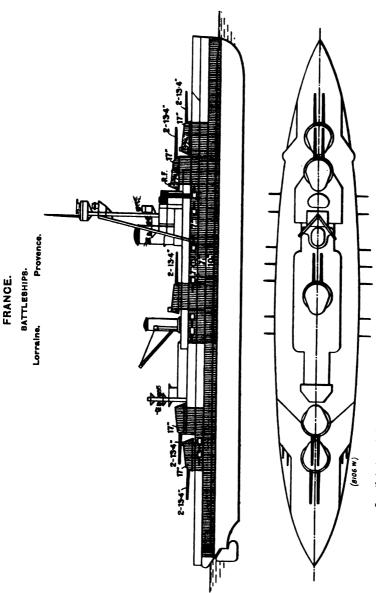
# ARMOURED GUNBOATS.



Length, 800 ft.; 3,900 tons; Speed, 15 knots. Armament, 4—10-in.; 8—4-1-in, A.A.; 4 m. Completed, 1932—33.



I Jength, 702 ft.; 26,500 tons; Speed, 29‡ knots. Completed, 1936.
Armament, 8-13-in.; 16-5-1-in.; 4-1-85-in.; 8-1-46-in.; 32--5-in.; 1 catapult; 4 aircraft.
Catapult fitted on quarter deck at M.L., and crane fitted on port side at break of deck.



Length (extreme), 544 ft. 6 ins.; 22,189 tons.; Speed, 21 knots; Completed, 1915-16; Modernised, 1925-27.

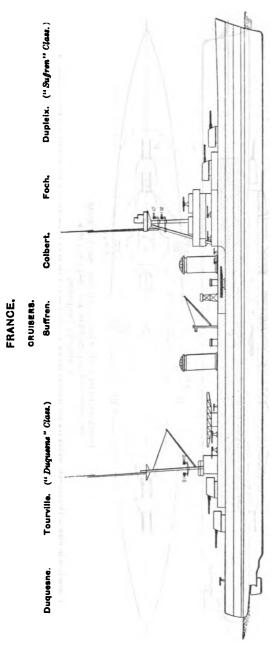
Armament, 10-18 4-in.; 14-5·4-in.; 8-3-in. 4.4.; 5-3-pr.; 2-1-pr.; 4 submerged 18-in. torpedo tubes. 4 sespianes. 1 catapult. Correction to plan. - The ships have now tall main topmasts and no fore topmasts.

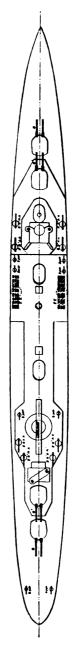
Nors.—Lorraine has been reconstructed. The midablys turnet has been removed and a hangar fitted in its place. Machinery is modernised and appead increased. Improved protection is fitted. 8—39-in. a.A. fitted in lieu of 3-in. a.A.'s. 2—13-4-in. guns removed. Cranes fitted abreast funnel. Bridgework extended.

FRANCE.

Paris.

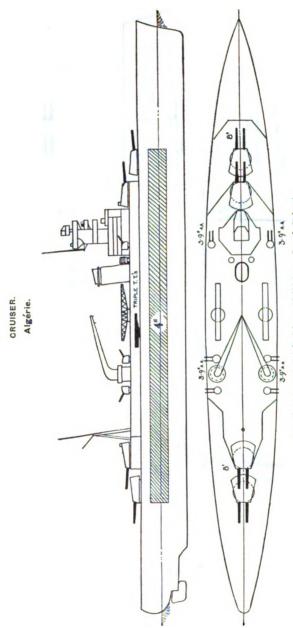
Length extreme), 551 ft.; Length B.P., 541 ft. 4 ins.: 22,189 tons; Speed, 20 knots; Completed, 1913-14. Modernised in 1929.
Converted to oil burning, 1931.
Armament, 12—12-in.; 22—5-4-in.; 7—3-in. A.A.; 2—3-pr.; 2—1-pr.; 4 submerged 18-in. torpedo tubes. Corrections to plan. - Cranes fitted abreast after funnel. After funnel reduced in height. Range-finder fitted on B turret. Courbet and Paris are under the control of the Free French.





Length (between perpendiculars), 607 ft. (Duquesne and Tourville (extreme), 626 ft. 8 ins.); 10,000 tons; Speed, 32 knots (Duquesne and Tourville, 33-2 knots). Armament, 8-8-in., 8-3-in. A.A. (Dupleix, Colbert and Foch have 8-3-5-in. A.A.); 8-1-pr.; 2-triple 21-in. T.T.'s. 2-3 seaplanes.

The above plan is for Duquesne and Tourville. The others differ slightly from this in details of bridges, cranes, catapults, etc. Suffren has 2 catapults in the position above. Colbert, Dupleix and Foch have tripod mainmasts, 2 catapults between the funnels and the two cranes abreast the after funnel; fore toposition above, commasts removed in Dupleix and Colbert, and shortened in Duquesne, Tourville and Foch.

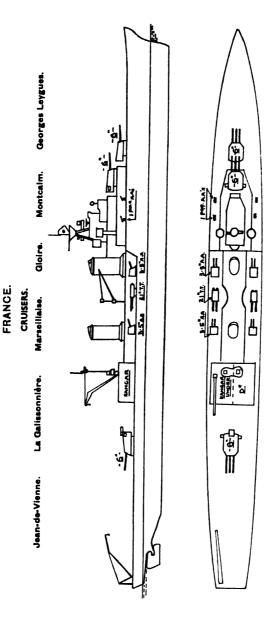


FRANCE.

Length (extreme), 610 ft. 3 ins.; 10,000 tons; Speed, 31 knots. Armament, 8-8-in.; 12-3:9-in. A.A.; 8-1:5-in.; 16 M. 1 catapult; 2 seaplanes.

Correction to plan. —The aircraft cranes are not sided as shown, but lie fore and aft from a structure on the middle line between funnel and mainmast.

Superstructure amidships modified and two cranes fitted.



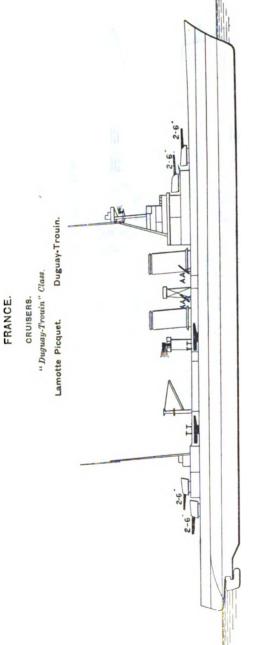
Longth (extreme), 589 ft.; 7,600 tons; Completed, 1985-87; Speed, 31 knots.

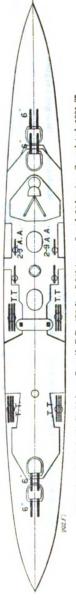
Armament, 9-6-in.; 8-8-5-in. 4.4.; 8--5-in. 4.4.; 4--217-in. torpedo tubes; 4 seaplanes; 1 catapult,

Fitted with Hein landing canvas at the stern.

Catapult fitted on atter turret.

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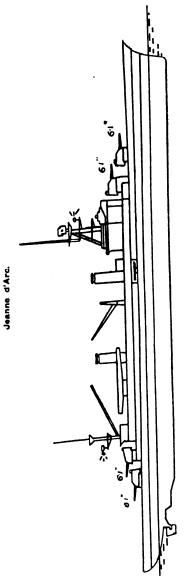
Armament, 8-61-in.; 4-8-in. A.A.; 2-8-pr.; 4 M.; 1 L.; 4 triple torpedo tubes (217-in. torpedoes); 1 catapult; 1 seaplane. Length (extreme), 594 ft. 10 ins.; Length B.P., 575 ft.; 7,249 tons; Speed, 34 knots. Completed, 1926-27. NOTE.-Reported to have protection to magazines.

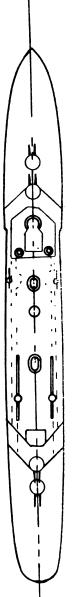
Correction to plan.—Catapult is fitted on quarter deck.

Fore topmast removed and masthead modified.

FRANCE.

TRAINING CRUISER.



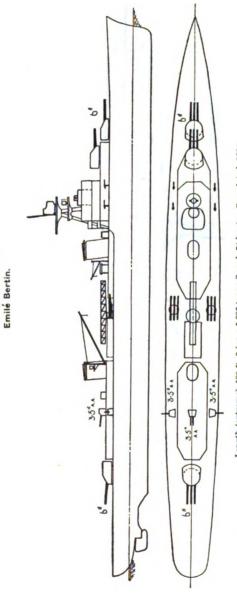


Length (extreme), 557 ft. 9 ins.; 6,496 tons; Speed, 36 knots; Completed, 1931.
Armament, 8—6'1-in.; 4—8-in. A.A.; 2—1'5-in.; 2 M.; 2—21'7-in. torpedo tubes; 2 seaplanes.

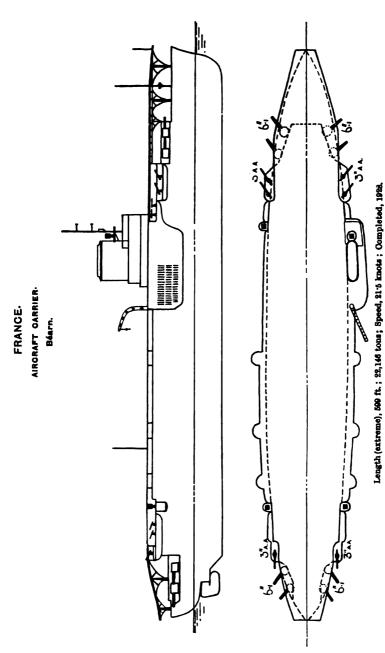
Correction to plan.—The catapults and fore topmast have been removed.

FRANCE.

CRUISER MINELAYER.

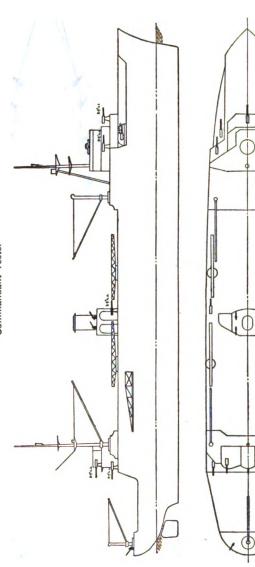


Armament, 9-6-in.; 4-3-5-in. A.A.; 4-1-5 A.A.; 8 M.; 200 mines: 6-21-7-in. torpedo tubes; 1 catapult; 2 aircraft, Length (extreme), 580 ft. 9 ins.; 5,886 tons; Speed, 34 knots. Completed, 1934. Correction to plan. -Small pole mast fitted on fore side of after turret.



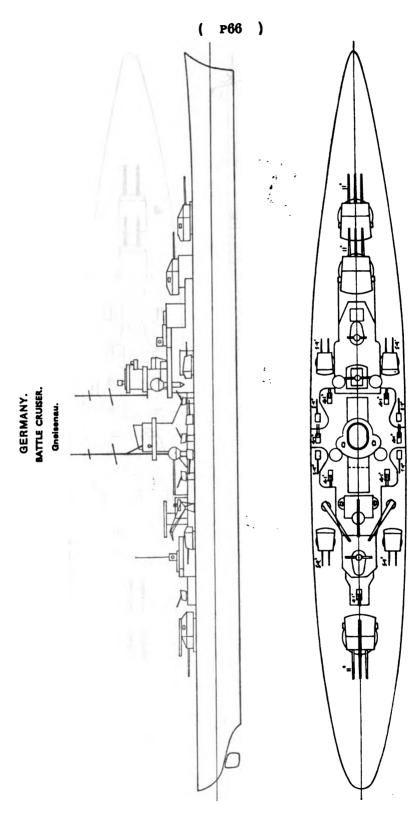
Correction to plan. - Space between flight deck forward and upper deck partially blanked off. Framework fitted to after-side of funnel. Armament, 8-6'1-in.; 6-3 in. A.A.; 8-1-pr. A.A.; 12 M. A.A.; 4-21'7-in, torpedo tubes : 40 planes.

FRANCE.
AVIATION TRANSPORT.
Commandant Teste.



Length (extreme), 548 ft.; 10,000 tons Speed, 20½ knots; Completed, 1932 Armament, 12-2.9.in. a.a.; 8-3-pr. a.a.; 12 M.; 19 planes.

Length (on W.L.), 792 ft. 6 ins.; 40,000 tons; speed about 28 knots; completed 1941, Armament, 8—15 in.; 12—5.9 in.; 16—4·1 in. 4.A.; 4 scaplanes; 2 estapulta,

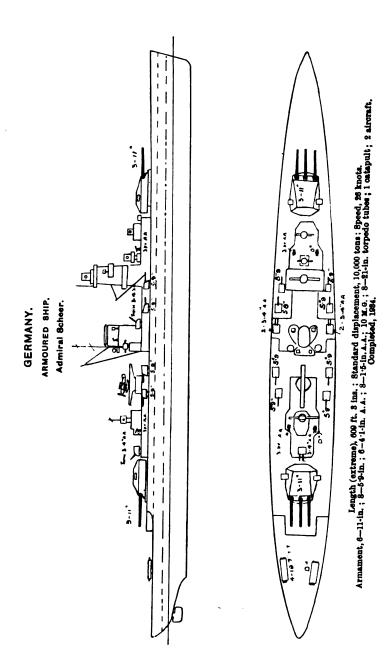


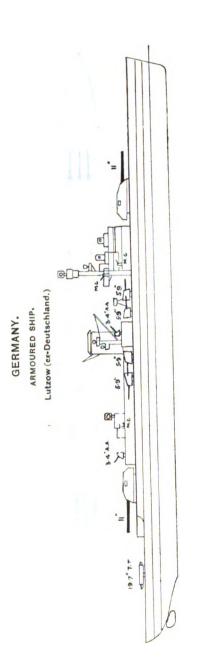
11-in. A.A.; 16-1-5-in. A.A.; 4 aircraft; 2 catapults. Length (extreme), 741 ft. 6 ins.; 25,000 tons; 27 knote; Completed 1958-39.

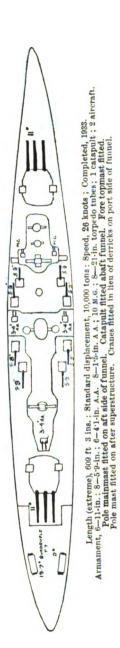
Armament, 9—11-in.; 12—5'9-in (4 twin furrefa, 4 single mounthing); 14—1-1-in. A.A.; 16—1'5-in. A

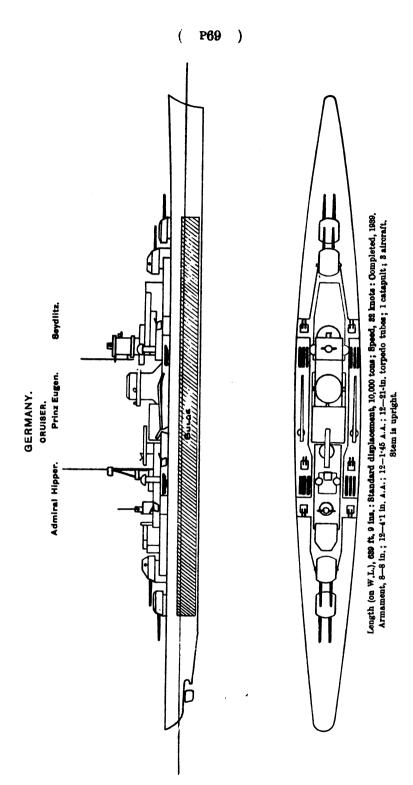
Mainmast moved aft and stepped as a tripod.

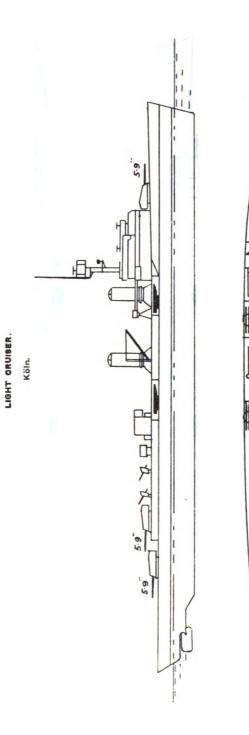
Foremast incorporated in the bridge.







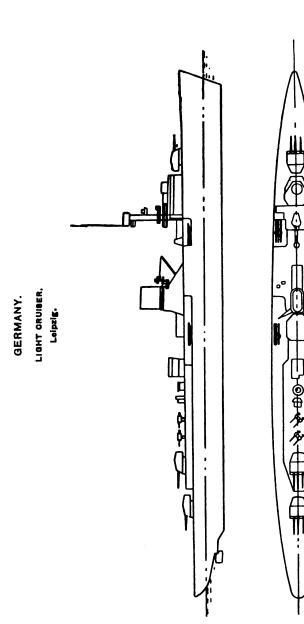




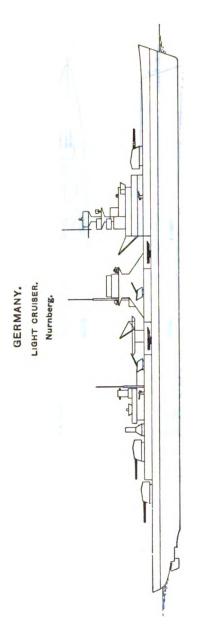
GERMANY.

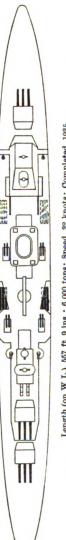
Length (extreme), 570 ft. 10 ins.; 6,000 tons; Speed, 32 knots; Completed, 1930.
Armament, 9-5-9-in.; 4-3-5-in. A.A.; 4 triple 21-in. torpedo tubes; 1 catapult; 2 aircraft.

Pole mainmast fitted on aft side of after funnel. Catapult fitted between funnels. Crane fitted in lieu of derrick on port side.



Length (catreme), 681 ft.; Length W.L., 543 ft. 10 hms.; 6,000 tons; Speed, 22 knots; Completed, 1931.
Armanent, 9—Fe'ln.; 8—Fe'ln., 4.4.; 8—1'F-ln. 4.4.; 4 triple 21-in. torpode tubes; 1 cataphil; 2 sirrentt.
Corrections to plan.—Pole mainmast fitted on aft side of funnel. Cataphil fitted between funnel and foreman.
The destrick is fitted on the starboard side. A crans is fitted on port side nearest funnel. Fore topmast shorts

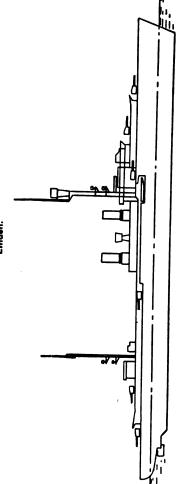


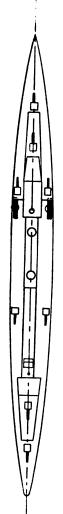


Length (on W.L.), 557 ft. 9 ins.; 6,000 tons; Speed, 32 knots; Completed, 1935. Armament, 9—5.9-in. 8—3.5-in H.A. 8—1.5-in. A.A. 12—21-in. torpedo tubes; 1 catapult; 2 seaplanes.

GERMANY.

LIGHT CRUISER. Emden.



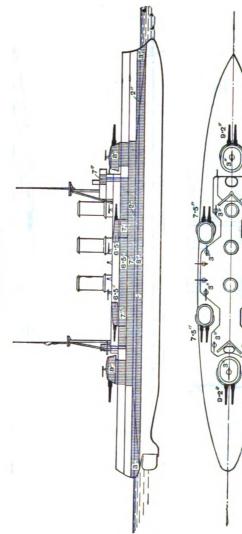


Length (extreme), 510 ft. 2 ins.; 5,400 tons; Speed, 29 knots; Completed, 1925.
Armanent, 8—55-in.; 3-35-in. A.A.; 4 M.G.; 4—197-in. torpedo tubes in twin mountings.
The 5-tin guns are in twin mountings, 2 forward and 2 sit.
Corrections to plan.—Fore topmast shortened. Pole mast fitted to aff side of aft funnel.
Superstructure added before mainmast. Mainmast shortened and surmounted by a searchlight platform.



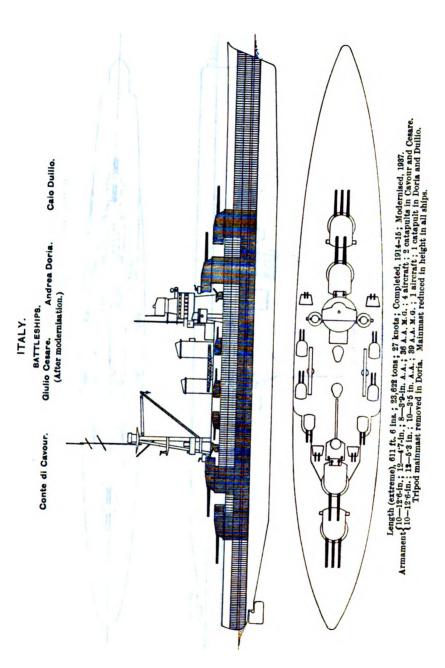
ARMOURED ORUISER.

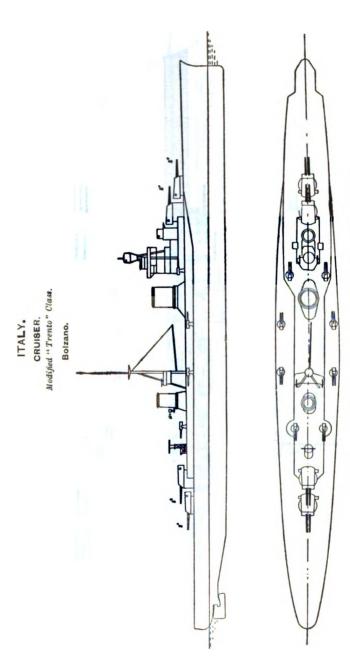
Giorgios Averoff.



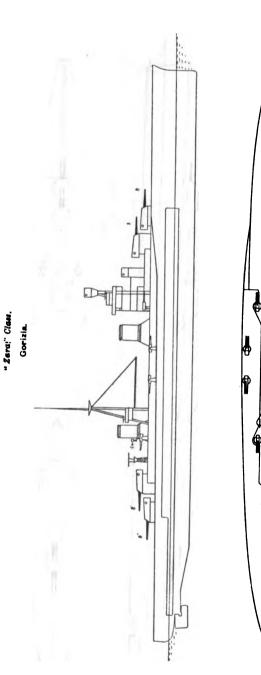
Armament, 4-9.2-in.; 8-7.5-in.; 16-3-in.; 3-3-in. A.A.; 4-3-pr.; 2 M.; 3 submerged 18-in. torpedo tubes. Length, 462 ft.; 9,301 tons; Speed, 22.5 knots; Completed, 1911. Refitted, 1927.

Correction to plan.—Bridgework modified. Control top fitted on foremast. Searchlight and derrick fitted to mainmast.





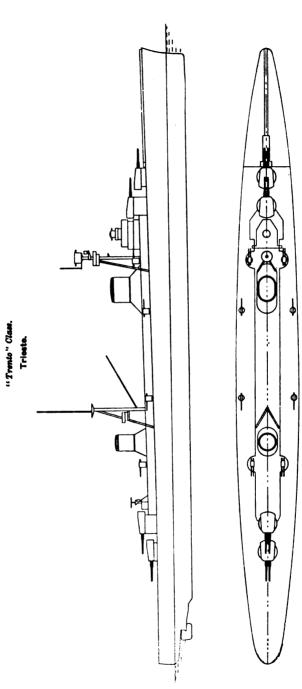
Corrections to plan. -- Forward superstructure faired into funnel. Clinker screens fitted to funnels. Catapult fitted amidships. Armament, 8-8-in.; 12-3-9-in. A.A.; 8-1.5 M. A.A.; 8-5 M. A.A.; 1 catapult; 2 aircraft; 8-21-in. torpedo tubes. Length (extreme), 646 ft. 3 ins.; 10,000 tons; Completed, 1983; Speed, 35 knots.



ITALY. CRUISER.

Length (extreme), 599 ft. 9 ins.; 10,000 tons; Speed, 32 knots.
Armament, 8—8-in.; 12—3'9-in.; 8—1'5-in. A.A.; 8—'5 M.A.A.; 1 catapult; 2 aircraft.
Corrections to plan.—Forward superstructure faired into funnel. Clinker acreens fitted to funnels.

e.



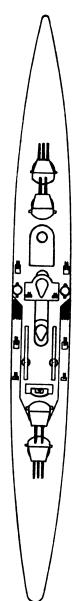
ITALY.

Longth (extreme), 646 ft.; 10,000 tons; Speed, 35 knots; Completed, 1959.
Armament, 8—8-in.; 12—3-9-in.; 4—1-57-in. A.A.; 8—5 A.A. M.S.; 4 twin torpedo tubes 21-in.
1 catapult; 2 aircraft.

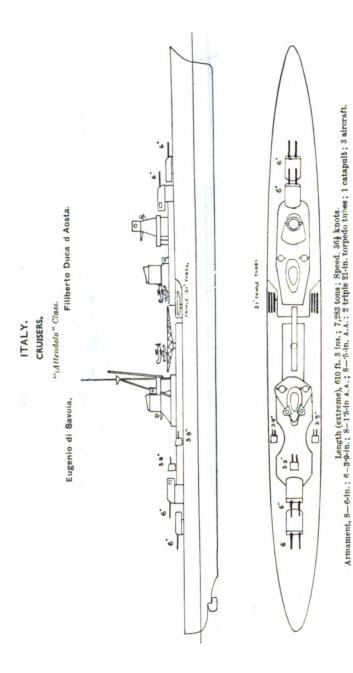
Correction to plan.—The 4-in. guns between the funnels are twin guns. Fore topmast removed. Bridgework extended. Sunk in 1943.

Quiseppe Garibaldi. CRUISERS. Duca Degli Abruzzi,

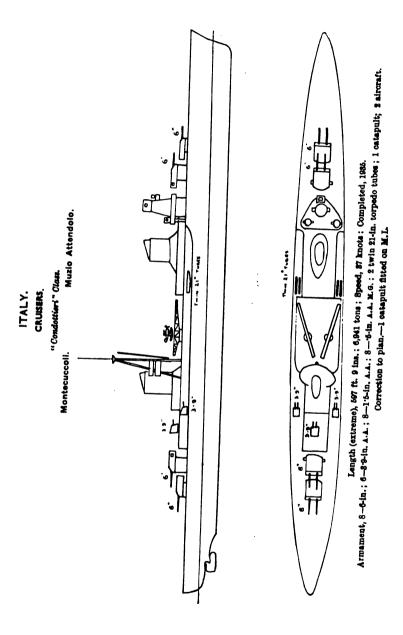
ITALY.



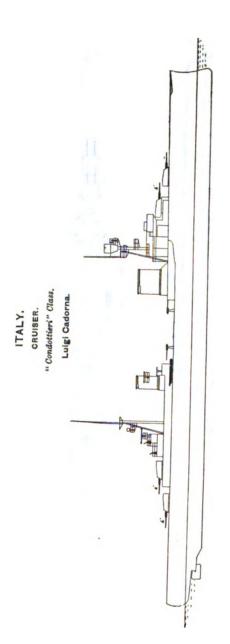
Length (extreme), 613 ft. 9 in.; Standard displacement, 7874 tons; Speed, 35 knots; Completed, 1936. Armament, 10—6 in.; 8—3.9 in. A.A.; 8—1.5 in. A.A.; 6—21 in. torpede tubes; 2 catapula; 4 alreraft. Bridge structure increased.



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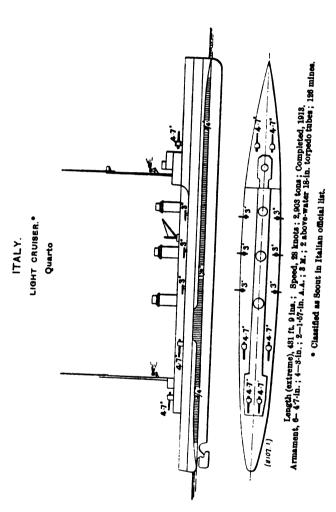


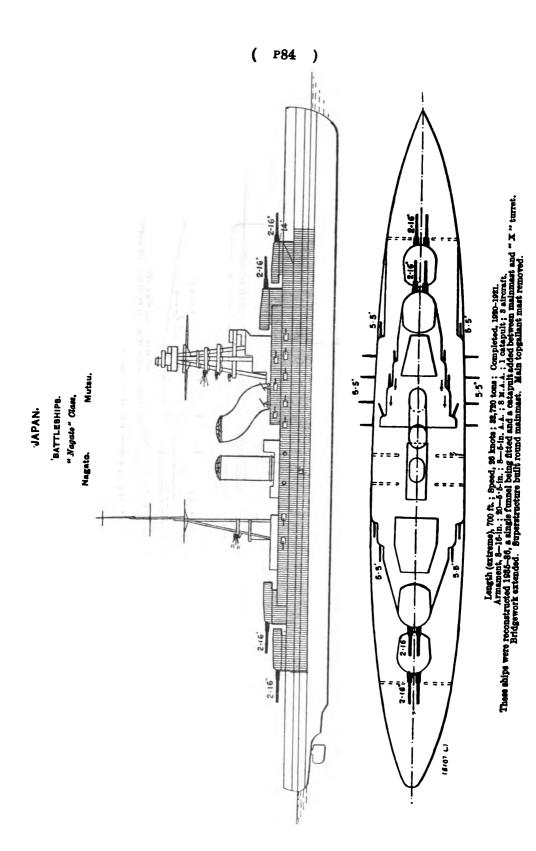
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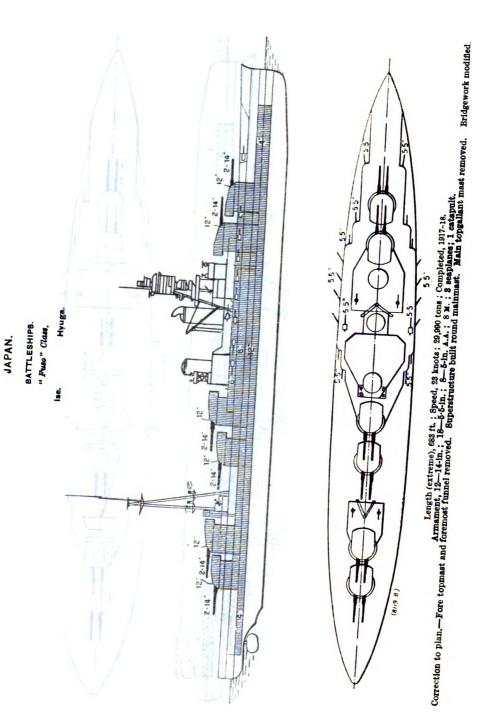
Torpedo tubes are abreast forward funnel.

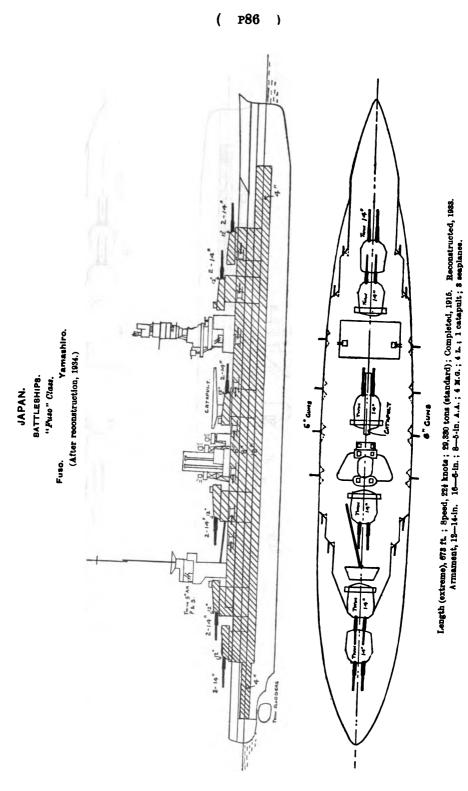




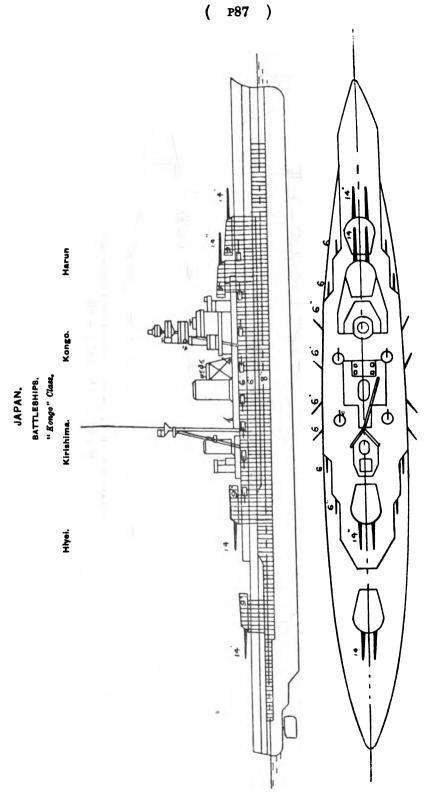
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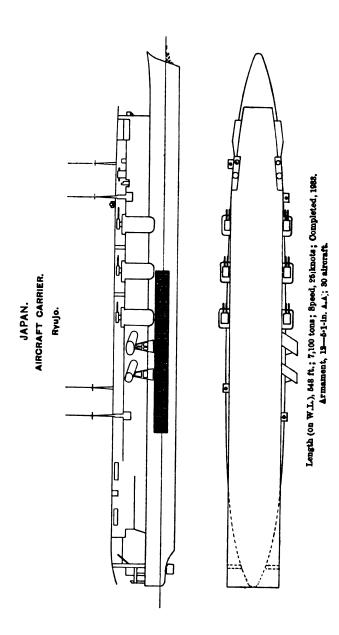
Length (extreme), 704 ft.; Speed, 26 knota; 29,330 tons; Completed, 1914-15. Reconstructed, 1935-36.

Armanent, 8-14-in.; 16-6-in.; 8-6-in. A.; 4 M.; 4 submerged 21.in. torped tubes; 3 structs!; 1 cataput.

Hiyel of this class has been converted to a Training Ship in accordance with the London Naval Treaty.

Corrections to plan.—The A.A. gums are in twin mountings. Derrick fitted between after turrets. Kongo has funnels of equal height.

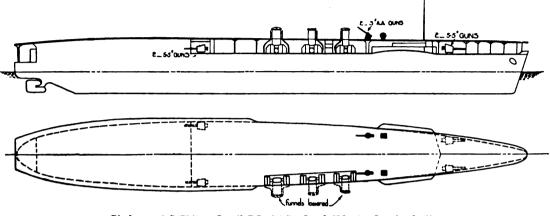
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## JAPAN.

## AIRCRAFT CARRIER.

Hosho.



Displacement, 7,470 tons; Length B.P., 510 ft.; Speed, 25 knots; Completed, 1922.

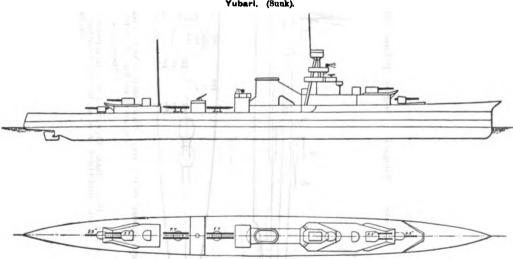
Armament, 4—5-5-in.; 2—3-in. A.A.; Carries about 20 planes; Fitted with gyro-stabiliser.

Funnels hinge outboard.

## JAPAN.

LIGHT CRUISER.

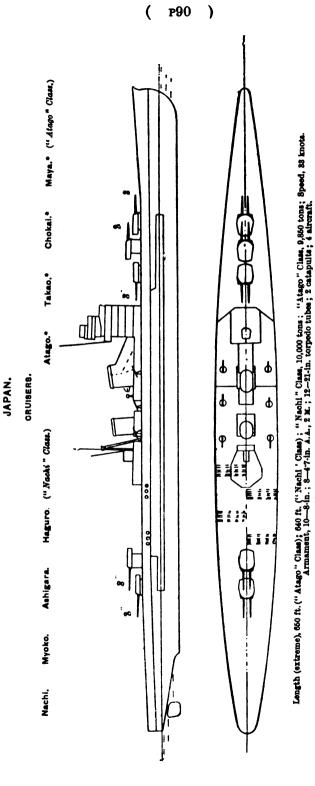
Yubari, (Sunk).



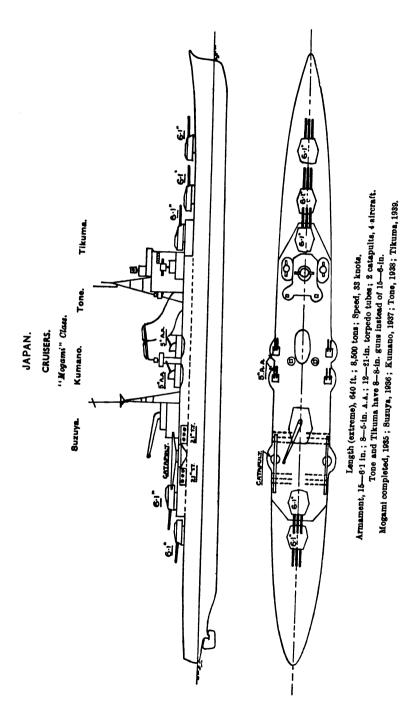
Length (extreme), 465 ft.; 2,890 tons; Speed, 33 knots. Completed, 1923.

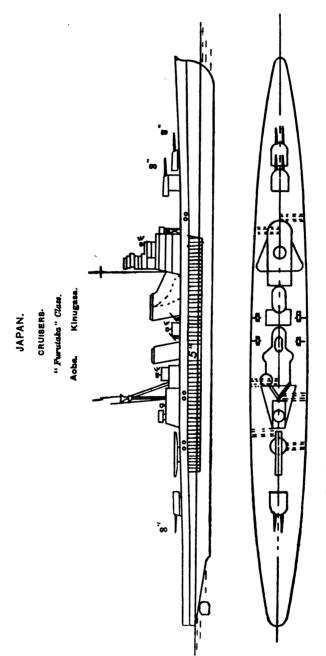
Armament, 6—5-5-in.; 1—3 in. A.A.; 2 M.; 2 twin 21-in. torpedo tubes; 34 mines.

Correction to plan.—Masts and funnel raked aft.

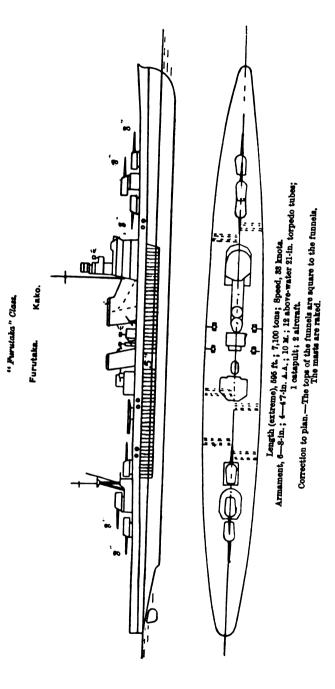


Corrections to plan.—In the "Takao" Class the after funnel is vertical, and the torpede tubes are beneath the funnels on a deek higher. The four 47-in. A.A. guns are a deek higher, Revenant has four braced legs. In the "Nachi" Class the foremost pair of 47-in. A.A. guns are a deek higher,
Two catapults fitted abaft mainmast. * These have 4-4.7-in. A.A., and 8-21-in. torpedo tubes.

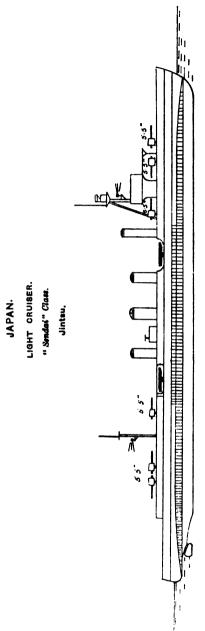


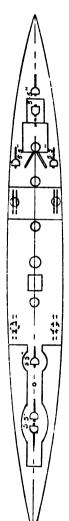


Length (extreme), 565 ft.; 7,100 tons; Speed, 38 knots; Completed, 1927.
Armament, 6-8-in.; 4-4.7-in. A.A.; 10 M.; 18-21-in. torpedo tubes;
I cateputit; 2 streagt.
Correction to plan.—The tops of the funnels are square to the funnels.
The pole mast is raked.



JAPAN.





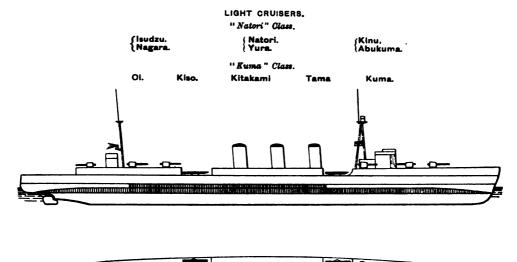
Length (extreme), 535 ft.; Speed, 33 knota; 5,196 tons; Completed, 1925.
Armament, 7—5.5-in.; 2—8-in. A.A.; 5 M.; 4 twin 21-in. torpedo tubes; 30 mines;
1 seaplane; 1 catapult.

Correction to plan.—Bows of Jintan and Naka have been modified to give more flair.

(atapuli fitted abalt mainmast which is of tripod construction and is fitted with a derrick.

Alreraft platform removed from forecastle.

#### JAPAN.

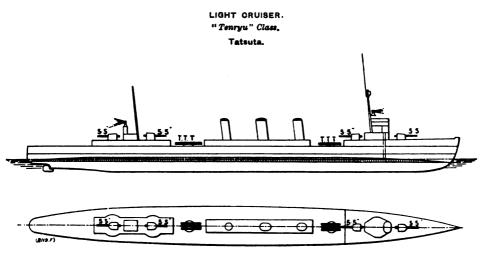


Length (extreme), 535 ft.; Speed, 38 knots; "Kuma" Class, 5,100 tons; "Natori" Class, 5,170 tons; Completed, 1920–23.

Armament, 7-5·5·in.; 2-3·in. A.A.; 2 M.; 4 twin above-water 21-in. torpedo tubes; 1 catapult; 1 aircraft. 80 mines.

Corrections to plan.—Catapult fitted before mainmast, which is of tripod construction and is fitted with a derrick.

Bridgework modified and anti-flare tops fitted to funnels.



Length (extreme), 468 ft.; Speed, 31 knots; 3,230 tons; Completed, 1919.

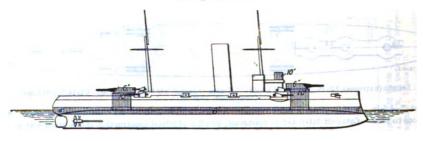
Armament, 4—5·5-in.; 1—3·in. A.A.; 2 M.; 2 triple above-water torpedo tubes; 1 scaplane.

Fitted for Minelaying.

## NETHERLANDS.

COAST DEFENCE SHIP,

Hertog Hendrik,



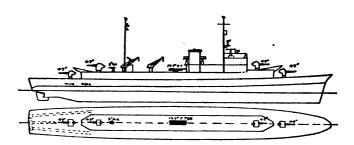


Length, 317 ft.: 4,371 tons; Speed, 16½ knots; Completed, 1904.
Armament, 1—9 4-in.; 4—5 9-in.; 2—3-in.; 6—1 pr.; 2 M.
After gun removed.

## NORWAY.

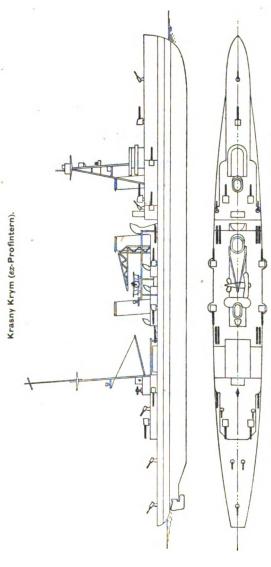
### MINELAYER AND TRAINING SHIP.

## Olav Trygvason.



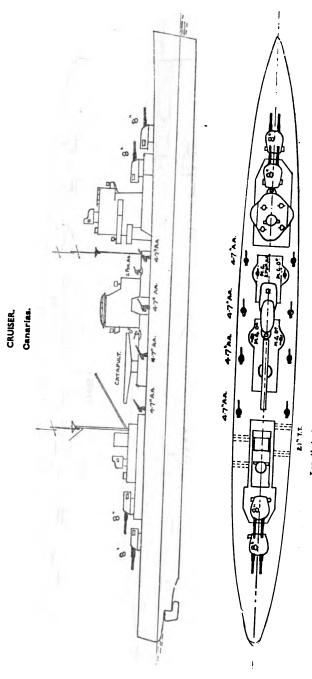
Length, 319½ ft.; 1,747 tons; speed, 21½ knots; Completed, 1934. Armament, 4-4-7-in.; 1-3-in. A.A.; 2-17-7-in, torpedo tubes. 280 mines.

Correction to plan.—Both cranes are fitted abreast the mainmast.



SOVIET UNION. CRUISER.

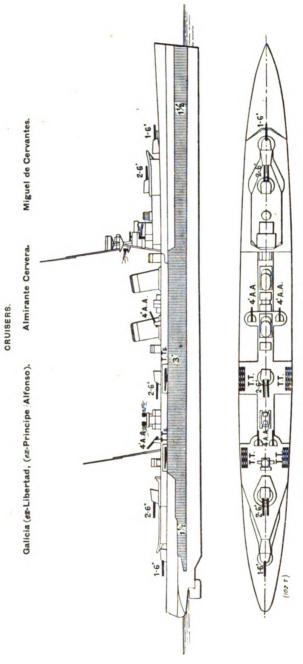
Leugth, 520ft.; Displacement, 7,200 tons; Speed, 29‡ knots; Completed, 1925.
Armament, 15-5'1-in.; 4-4-in.; 4-3-in. A.A.; 4 M.; 12-21-in. torpedo tubes; 100 mines; 2 seaplanes.



SPAIN.

Length (extreme), 636 ft.; 10,000 tons; 38 knots; Completed, 1934.
Armament, 8—8-in.; 8—47-in. A.A.; 8—2-pr. A.A.; 12—21-in. torpedo tubes; 1 catapult; 2 aircraft,
Masta removed.

(



SPAIN

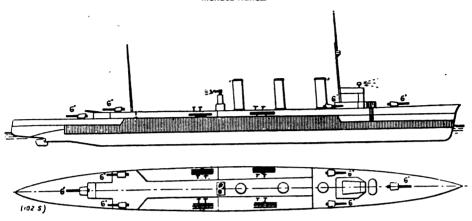
Corrections to plan. -The mainmast is triped and has been moved forward. Fore topmast and topgallant mast removed. Armament, 8-6-in.; 4-4-in. A.A.; 2-3 pr.; 1 M.; 4 triple above-water torpedo tubes (21-in. torpedoes) Length (extreme), 579 ft. 6 ins.; 7,475 tons; Speed, 33 knots. Completed 1927-1930.

( P101 )

#### SPAIN.

LIGHT CRUISER.

Mendez Nuñez.



Length (extreme), 462 ft.; 4,509 tons; Speed, 29 knots. Completed, 1924.

Armament, 6—6-in.; 4—1-9-in. A.A.; 4 M.; 2 above-water triple torpedo tubes (21-in. torpedoes).

NOTE.—The armour belt is 3 ins. thick, tapering to 12 ins. at the ends.

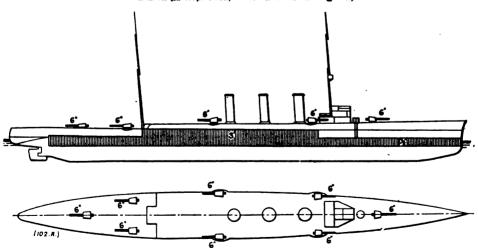
Corrections to plan.—The foremast is tripod.

A.A. Armament is fitted between second funnel and mainmast.

Searchlight platform added round after funnel.

#### LIGHT CRUISER.

Navarra (gg-Republica, gz-Reina Victoria Eugenia).



Length (extreme), 462 ft.; 4,867 tons; Speed, 25† knots; Completed, 1923. Armament, 8—6-ln.; 4—8-5-ln. A.A.; 4 M.; 1 L.

Correction to plan.—Foremost funnel and masts removed. Tower built in place of foremast and superstructure built in place of mainmast and fitted with pole masts.

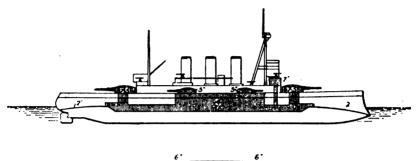
A.A. Armament fitted in way of funnels. Upper deck extends further aft.

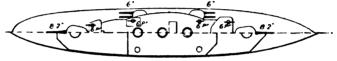
( Pl02 )

#### SWEDEN.

BATTLESHIP.

Oscar II.





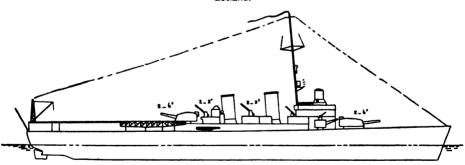
Length, 818-6 ft.; 4,250 tons; Speed, 18 knots; Completed, 1907.

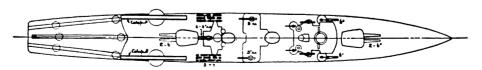
Armament, 2—8-3-in.; 8—5-9-in.; 8—5-pr.; 1—1-pr.; 2 submerged 18-in. torpedojtubes.

Searchlights fitted on foremast. Mainmast removed

## AIRCRAFT CRUISER.

Gotland.





Length, 442 ft.; 4,700 tons; Speed, 27 knots; Completed, 1234.

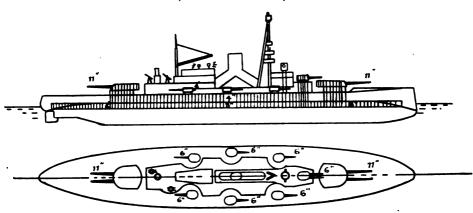
Armament, 6-6-in.; 4-3-in. A.A.; 4 M.; 6-21-in. torpedo tubes; 1 catapult; 11 scaplages; 100 mines.

Correction to plan.—1 catapult is fitted on middle line.

## SWEDEN.

#### COAST DEFENCE SHIPS.

**Qustav V.** (As reconstructed 1924-29.)



Length, 396-7 ft.; Sverige, 6,890 tons; Gustav V, 7,100 tons; Speed, 23 knots; Completed 1917-21.

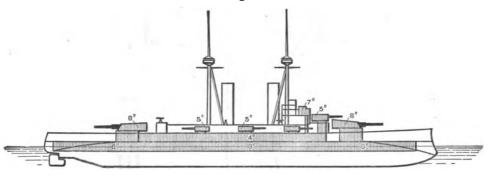
Armament, 4—11-in.; 6—5-9-in.; 4—3-in.; 2—6-pr.; 6 M.

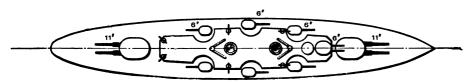
Correction to plan.—Fore topmast added. Bridgework extended. Mainmast removed. In Sverige the mainmast. is shortened; two funnels are fitted, the after one being vertical and the forward one bent.

## SWEDEN.

## COAST DEFENCE SHIP.

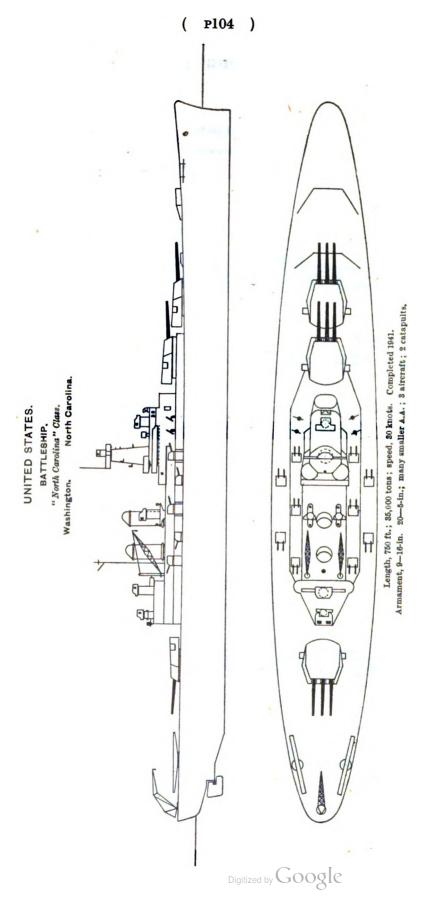
Drottning Victoria.

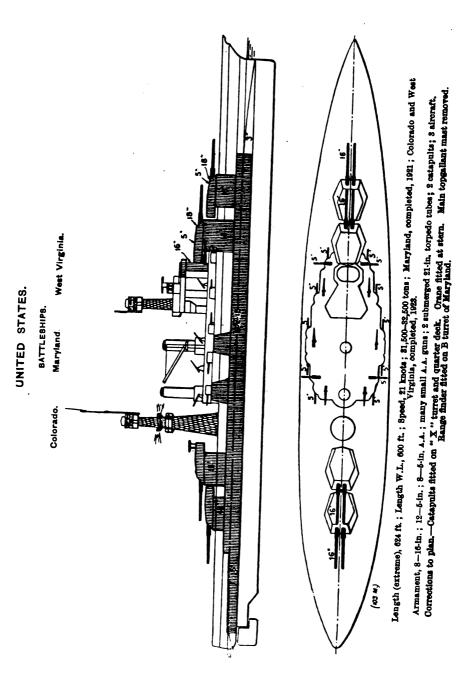


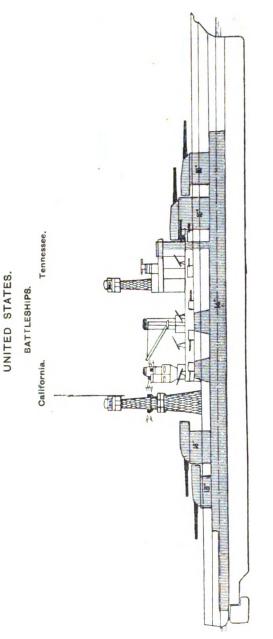


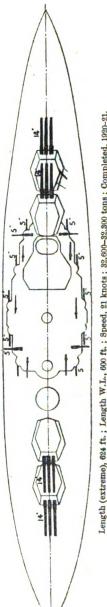
Length, 896 7 ft.; 7,100 tons; Speed, 28 knots; Completed, 1921. Armament, 4—11-in.; 8—5'9-in.; 4—3-in.; 2—6-pr.; 9 M.

Main mast removed and bridgework modified. Searchlight platform and A.A. guns fitted abaft after funnel-









Length (extreme), 624 ft.; Length W.L., 600 ft.; Speed, 21 knots; 32,600-32,300 tons; Completed, 1920-21.

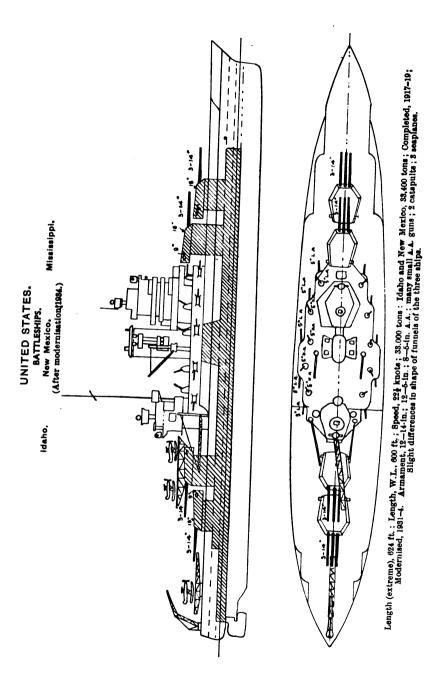
Armanent, 12-14-in, 13-6-5-in, ; many small A.A. guns; 2 submerged 21-in. torpedo tubes.

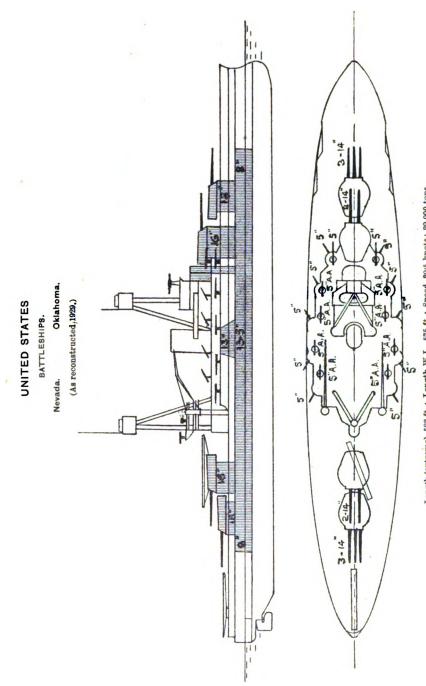
2 catapulta (one right aft on quarter deck and one "X" turret); 3 seaplanes.

Main topmast shorteend. Grane at stern.

Topmast and yards fitted to foremast.

Extensively reconstructed after damage received at Pearl Harbour.



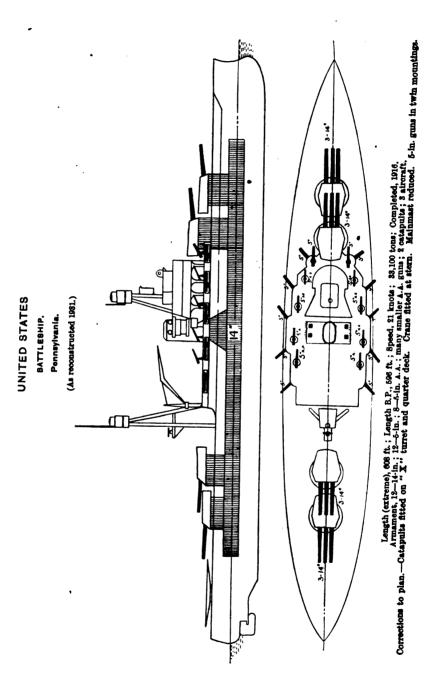


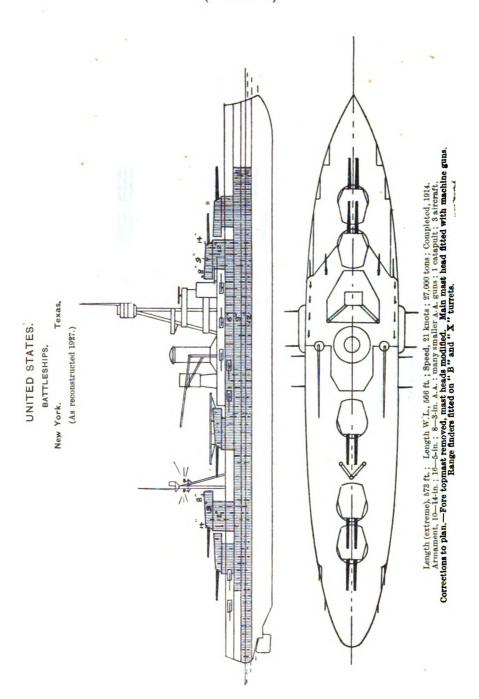
Length (extreme), 583 ft.; Length W.L., 575 ft.; Speed, 20.5 knots; 29,000 tons.

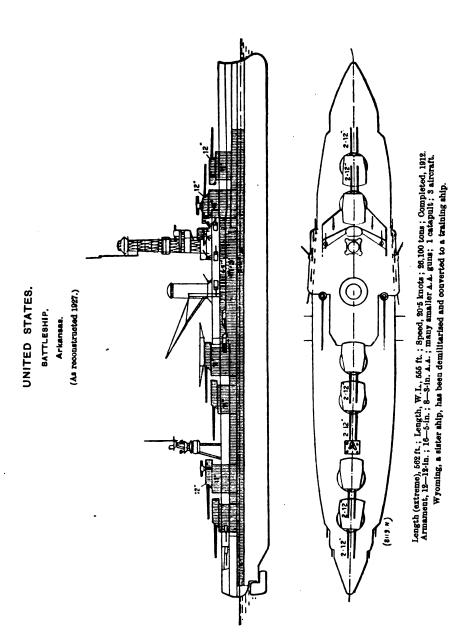
Armament, 10—14-in.; 16—5-in.; many smaller A.A. guns; 2 catapults; 3 aeroplanes.

Correction to plan.—Bridgework extended and mastheads modified.

Appearance has been drastically changed by refits following damage received at Pearl Harbour.



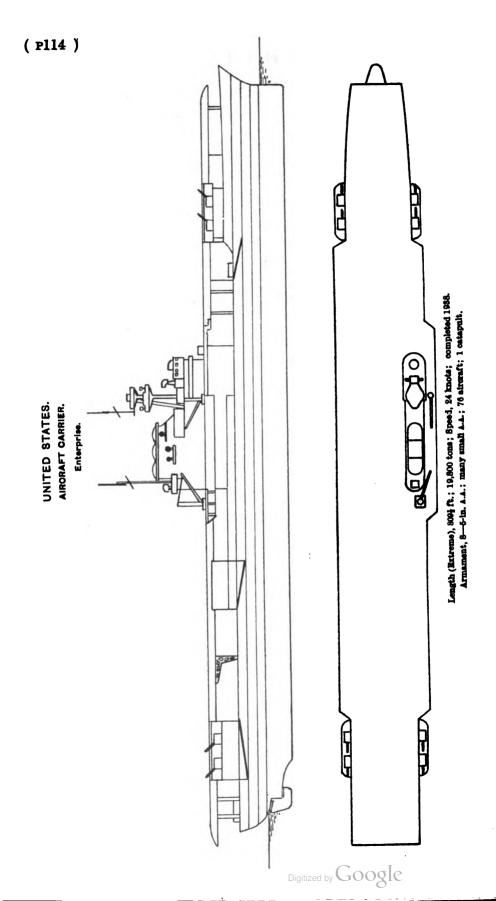


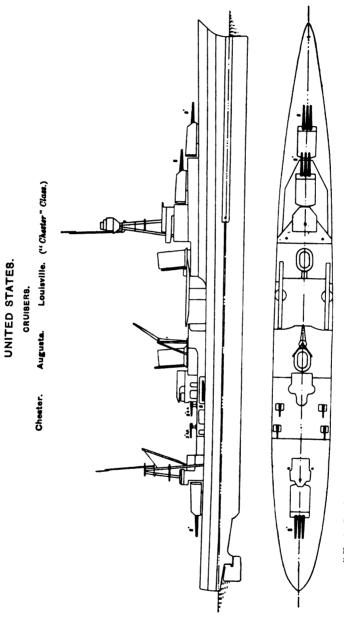


UNITED STATES.

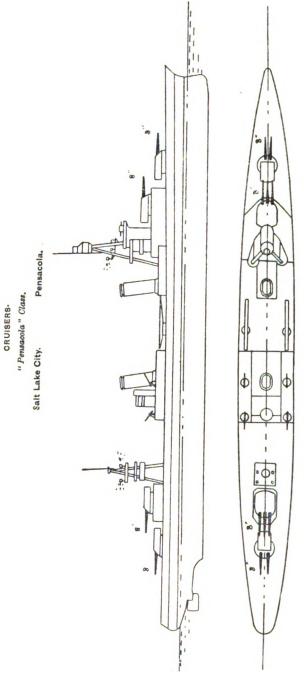
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Armament, 8—5-in. a.a.; many small a.a.; 76 abreaft. NoTR.—The funnels can be swung outboard. Signal masts fitted at ends of flight deelt.



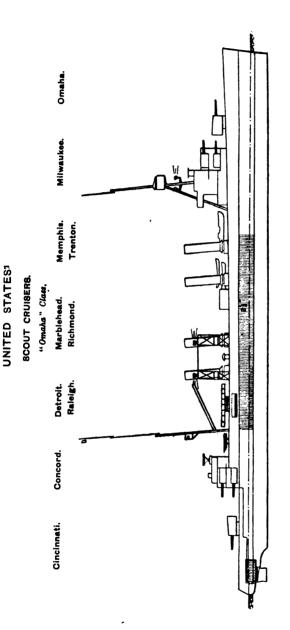


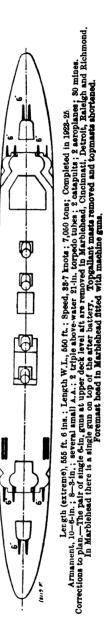
"(Chester" and "Augusta" Chasses : Length (extreme), 600¢ ft. : 9,050-9,800 tons ; Speed, 32°5 knots ; Completed, 1980-81.
Armament, 9—8-in , 4—5-in A.4.; many small A.4. guns ; 2 catapults ; 4-6 seaplanes.
Correction to plan.—Fore topmast shortened.

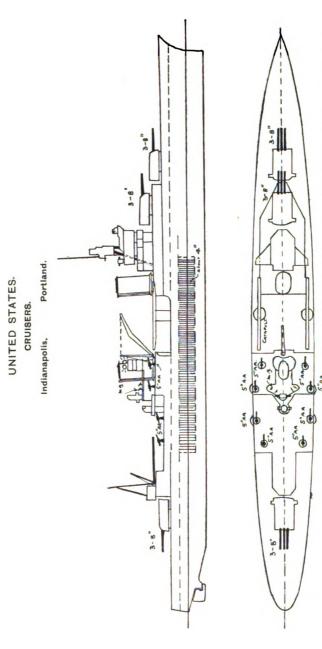


UNITED STATES

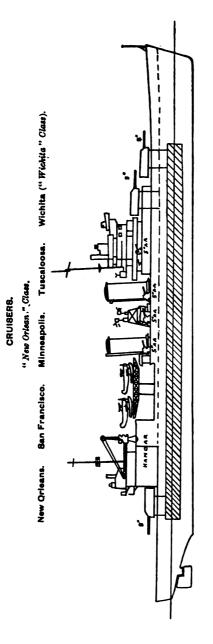
Length (extreme), 582; ft.; 9,100 tons; Speed, 82-7 knots; Completed, 1930.
Armament, 10—8-in.; 8—5-in. A.A.; many small A.A. guns; 2 catapults; 4 seaplanes.
Corrections to plan.—Crane fitted on fore side of after funnel and derricks fitted on after side.



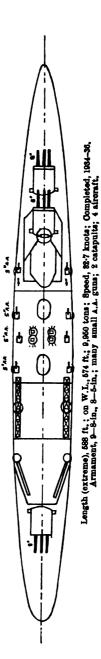




Length (extreme), 610 ft. 3 ins.; Indianapolis, 584 ft. on W.L.; Portland, 582 ft. on W.L.; Indianapolis, 9,960 tons; Portland, 9,900 tons; Speed, 32-7 knota.
Completed, 1982-1933. Armament, 9-8-in., 8-5-in. A.A.; many small A.A. guns; 2 catapults; 4-6 aircraft; 2-3-pdr.
Corrections to plan.—Fore topmast is raked. Foremost funnel lengthened.



UNITED STATES.



## INDEX.

Admiral Scheer, German armoured ship, severely damaged, 67
Air attacks: on Allied shipping, 12, 19; on enemy shipping, 15, 18, 21, 22, 25, 26, 27, 33, 40, 45, 46, 50, 52, 53, 56, 60, 63, 64, 65, 67, 70; on Germany, results of, 5
Air war at sea, 102-10; see also U-boat war Antwerp, capture of, 47
Anzio, bridgehead, naval support, 15, 20, 28
Argentine navy, 210; battleships, r3, r50; cruisers, r18, r21, r51; destroyers and submarines, 274, r24
Artic, operations in, 27, 31, 63, 68
Athabaskan, H.M.C.S., loss of, 30
Atlantic, operations in, 19, 23, 25, 28, 32, 36, 45, 54
Attachés, British and foreign, 323-4
Australian navy, 66, 207; cruisers, r10, r11, r15, r44, r47

Baltic, operations in, 15, 45, 49, 64 Battleship, effective use of, 4, 67 Belgium navy, 89, 247 Biak Island, landing on, 34 Black Sea, operations in, 32, 40, 50 Blockade, effect of, 14; runners, British, 39; success in Pacific, 29 Boadicea, H.M.S., loss of, 42 Bolzano, Italian cruiser sunk, 64 Brazilian navy, 54, 91, 211; battleships, P3, P53; destroyers and submarines, 274 Brest, surrendered to Americans, 47 British maritime industries, future of, 93-110: American shipping after the war, 96; British shipping in past, 93-6; financial problem, 99; International factor, 99; prospect for British shipping, 97; regulation of future shipbuilding, 101; surplus tonnage, 100; war effort, 96 British navy: aircraft carriers, 200-01, P7, P9, P33-4, P46; battleships, 198-9, P1, P4, P5, P27-32; cruisers, 202-05, P10, P11, P13, P15, P17, P18, P19, P21, P22, P35-43, P45-49; destroyers, 259-64, P23, P24, P25, P26; submarines, 265-6; miscellaneous, 206, 266-73 British Pacific Fleet, powerful force, 66 Bulgaria, declaration of war on Germany, 50

Cambier Bay, U.S. escort carrier, loss of, 59 Canberra, H.M.A.S., loss of, 34 Canadian navy, 12, 13, 36, 208 Capelin, U.S. submarine, loss of, 25 Carrier operations, 168-89: Altantic war, 179-80; carriers in amphibious operations, 186-8; changes in outlook, 173-5; enemy surface ships, 183-6; escort carriers, 181-3; importance of carriers, 176-9; our carrier fleet in 1939...168-70; outbreak of war, 170-3 Chilean navy, 92, 212; battleship, p2, p52; destroyers and submarines, 275, p24

Bulgarian navy, 90, 247

Chinese navy, 92, 247
Cisco, U.S. submarine, loss of, 22
Columbian navy, 247, P24
Coral Sea, battle of, 156
Corry, U.S.S., loss of, 42
Corvettes, H.M., loss of: Asphodel, 25;
Hurst Castle, 52; H.M.C. Alberni, 52;
Shawinigan, 70
Corvina, U.S. submarine loss of, 25
Cuban navy, 248

Danish navy, 90, 213, 275, P22, P25
Darter, U.S. submarine, loss of, 66
D-day, see France, invasion of
Diary of 1944 naval events, 310-21
Dominican navy, 248
Dragon, Polish cruiser, loss of, 71
Dutch navy, 90, 230; coast defence ship, P96; cruisers, P17, P21; destroyers, 285, P24; submarines, 285

East Indies, operations in, 68
E-boats, operations of, 19, 20, 23, 27, 28, 31, 32, 35, 36, 37, 39, 43, 44, 48, 49, 63, 67
Ecuadorian navy, 248
Egyptian navy, 248
Escort Group, 2nd, congratulated, 23
Estonian navy, 248
Explosive motor-boats, 47

Fighting forces, organisation of, 1-11

Finish navy, 249, P21, P53
Fiske, U.S. escort destroyer, loss of, 46
Flier, U.S. submarine, loss of, 52
France, German campaign in, 1
France, invasion of by Allies, Northern, 34;
Southern, 42; see also Normandy, landing in
French Atlantic ports, U-boat bases in, 1
French navy, 87-88; aircraft carriers, 216, P7, P9, P63, P64; battleships, 214, P3, P4, P54-56; cruisers, 216, P13, P14, P15, P16, P18, P20, P57-62; destroyers, 276, P23; submarines, 276-77, miscellaneous, 217
Frigates, H.M., loss of: Blackwood, 42; Bullen, 70; Gould, 25; Lawford, 42; Mourne, 42; Valleyfield, 34
Fuso, Japanese battleship, loss of, 86

Garth, H.M.S., loss of, 19
German naval thought, strategy and propaganda of, 125-50: Assman, 139-42; characteristics, 125-6; contradiction in Tirpitz's policy, 130-2; maritime strategy, 147-50; naval policy, 142-4; naval strategy, 144-7; Tirpitz's policy, 126-30, 135-6; Wegener, 136-9; world war, 132-4

German navy, 89; battleships, 218, P4, P6, P65; cruisers, 219, P15, P18, P20, P21, P66-73; destroyers, 278, P24; submarines, 278; miscellaneous, 220

#### INDEX.

Glennon, U.S.S. loss, of 42 Gneisenau, German battleship, 18, 26, 67 Golet, U.S. submarine, loss of, 59 Graph, H.M.S., formerly German U-boat, 62 Grayback, U.S. submarine, loss of, 38 Greece, ill-starred campaign in 1941...2 Greek navy, 90, 221; cruisers, P12, P74; destroyers and submarines, 279, P26 Gudgeon, U.S. submarine, loss of, 52

Hardy, H.M.S., loss of, 22
Haytian navy, 250
Herring, U.S. submarine, loss of, 59
Holcombe, H.M.S., loss of, 17
Home waters, operations in, 14, 15, 19, 23, 26, 31, 35, 39, 44, 48, 54, 62, 67
H.M. the King, congratulates Home Fleet, 26; visit to Courseulles, 34; visit to Home Fleet, 30
"Human torpedo," 28, 47
Hungarian navy, 250
Hurricane, H.M.S., loss of, 17

Icelandic navy, 250
Indian navy, 209
Indian ocean, operations in, 28, 33, 41, 50, 55
Inglefield, H.M.S., loss of, 25
Iraqi navy, 250
Iris, H.M.S., loss of, 46
Italian navy, 88-9; aircraft carrier, P9; battleships, 222, P3, P75; cruisers, 223-4, P10, P12, P16, P17, P76-83; destroyers, 280, P23, P24, P25, P26; submarines, 280-1; miscellaneous, 225

Janus, H.M.S., loss of, 22 Japanese navy, 86-7; aircraft carriers, 227, P8, P9, P88-9; battleships, 226, P2, P4, P84-7; cruisers, 228-9, P10, P11, P12, P13, P20, P21, P89-95; destroyers, 282-3, P23, P24, P25; submarines, 283-4; miscellaneous, 229

Laforey, H.M.S., loss of, 30 Lansdale, U.S.S., loss of, 30 Latvian navy, 251 Leopold, U.S.S., loss of, 25 Liners, loss of, British: 36, 70; U.S., 66 Lithuanian navy, 251 Luftwaffe, the, 1, 10, 15, 20, 171, 173, 174, 176, 177 Lützow, German armoured ship, damaged, 67

Macaw, U.S. submarine rescue ship, loss of, 22
Mahratta, H.M.S., loss of, 25
Malacca Straits, operations in, 16
Malta, blackout lifted, 54
Manchukuo navy, 251
Marseilles, entered by Allies, 43
Marshall Islands, U.S. operations against, 17, 20
Mediterranean, campaign in, 1, 15, 19, 24, 28, 32, 36, 40, 49, 54, 64, 68
Merchant navy, heavy loss of, 71, 94; tribute to, 14; Norwegian, 25

31

Meredith, U.S.S., loss of, 42
Mexican navy, 92, 251
Midway, battle of, 156
Mindoro, Island of, landing on, 69
Minesweepers, H.M., loss of: Britomart, 60;
Cato, 60; Felixatowe, 17; Hussar, 60;
Lovalty, 60; Magic, 46; Pylades, 46;
H.M.A. Armidale, 66; U.S. Tide, 42
Musashi, Japanese battleship, sunk, 59

Naval aircraft: British, 302-04; U.S. 305-06; Germany and Japan, 307-09
Navy after the war, 190-195
Nestor, H.M.A.S., loss of, 66
Netherlands navy, see Dutch navy
New Zealand navy, 209
Nicaraguan navy, 251
Normandy, landing in, 160-167; see also
France, invasion of
Norway, German campaign in, 1; U-boat
bases in, 1
Norwegian navy, 90, 231; cruiser, P22;
minelayer, P97; destroyers and submarines, 286

Officials of British and foreign navies, 322

Pacific, operations in, 3, 4, 16, 17, 20, 24, 29, 33, 37, 41, 46, 51, 56, 65, 68 Pacific war, strategy of, 111-24: American growing superiority, 119-22; approaching the end, 122-4; Japan's reversion to defensive, 118-9; riddle of Midway, 114-5; struggle for Guadalcanal, 115-7 Paraguayan navy, 252 Pearl Harbour, attack on, 3, 158; lesson of, 5 Penelope, H.M.S., loss of, 24 Persian navy, 252 Perth, H.M.A.S., loss of, 34 Peruvian navy, 252 Phillipines, landing in, 56; naval battle of, 59 Philippino navy, 252 Polish navy, 91, 252, r23, r26 Portuguese navy, 91, 253, P24 Princeton, U.S. aircraft carrier, loss of, 59

Quorn, H.M.S., loss of, 46

R-boats, 23, 40, 44, 48, 54, 63
Rich, U.S. destroyer escort, loss of, 112
Robalo, U.S. submarine, loss of, 52
Rocket projectiles, 48; rocket-propulsion unit, use of, 54
Rockingham, H.M.S., loss of, 60
Roumania, declaration of war on Germany, 50
Roumanian navy, 91, 254
Russian navy, 89; battleships, 232, P3; cruisers, 233, P11, P19, P98; seaplane carrier, 232; destroyers, 287, P25, P26; submarines, 287-8; miscellaneous, 233

S44, U.S. submarine, loss of, 22St. David, H.M. hospital ship, bombed and sunk, 13

[2]

#### INDEX.

St. Lô, U.S. escort carrier, loss of, 59 Saipan, capture of, 41 Salonika, occupation of, by Allies, 64 Scharnhorst, German battleship, 19, 26 Schwabenland, German catapult ship, loss Scorpion, U.S. submarine, loss of, 25 Sea-air-land power in Pacific, 151-9 Seawolf, H.M. submarine, presumed lost, 71 Services, the, amalgamation of, 5-11; sub-division of, 9; tradition of, 10 Shipping losses: Allied, 3, 22, 25, 30, 34, 38; enemy, 16, 17, 18, 21, 24, 25, 26, 27, 33, 34, 35, 38, 40, 41, 42, 44, 45, 46, 50, 52, 56, 59, 64, 65, 66, 69, 70 Shokaku, Japanese carrier, loss of, 86 Simoon, H.M. submarine, loss of, 22 Sloops, H.M., loss of, Woodpecker, 25; H.M.A. Parramatta, 66; Yarra, 66 South African navy, 209 Soviet Union navy: see Russian navy Spanish navy, 91, 234; cruisers, 234, Pl1, Pl7, P20, P99-101; destroyers, 289, P24; submarines, 289 Spartan, H.M.S., loss of, 20 Submarines, operations of: America, 17, 22, 24, 34, 38, 42, 46, 52, 57, 60, 66, 70; British, 13, 14, 16, 18, 22, 25, 27, 30, 32, 40, 41, 44, 48, 50, 54, 56, 63. For quantitative particulars, see under respective Susan B. Anthony, U.S. transport, loss of, 42 Svenner, Norwegian destroyer, loss of, 42 Swedish navy, 91, 235-6; aircraft carriers, P9, P102; battleships, P1, P102; defence ships, 235-6, P19, P20, P103; destroyers, 290, P24; submarines, 290 Swift, H.M.S., loss of, 42 Sydney, H.M.A.S., loss of, 34 Syrtes, H.M. submarine, loss of, 30

Thailand navy, 255 Thames estuary, sea forts, 54 Tirpitz, German battleship, 28, 44, 49, 53; sunk by bombers, 61
Trafalgar Day speech, 53
Trawlers, H.M., loss of: Gairsay, 60; Lord Austen, 42
Turkish navy, 256, P4
Turner, U.S.S., loss of, 17
Tynedale, H.M.S., loss of, 17

anti-submarine weapon, 30; communiqué on, 12, 18, 19; joint-statement on, 12, 17, 22, 25, 30, 35, 38, 39, 48, 53, 60, 67; in Adriatic, Italian co-operation, 28; in Artic, 31, 52; in Atlantic, 12, 23, 28, 30, 32, 46; Norway as main U-boat base, 51 Uruguayan navy, 92, 257
U.S. navy, 73-86; aircraft carriers, 240-41, P7, P8, P112-4; battleships, 237-9, P1, P2, P5, P6, P104-11; cruisers, 242-5, P10, P13, P14, P115-9; destroyers, 291-7, P23, P25, P26; submarines, 297-300; miscellaneous,

U-boat war, 3, 35, 36, 43, 44, 49, 54; Allied

Vampire, H.M.A.S., loss of, 66

Walcheren, Island of, landing operation, 61 Warrington, U.S.S., loss of, 52 Warwick, H.M.S., loss of, 22 Waterhen, H.M.A.S., loss of, 66

Venezuelan navy, 257

248

Yamashiro, Japanese battleship, sunk, 59 Yamato, Japanese battleship sunk, 86 Yugoslav navy, 257, r23

Zuikaku, Japanese aircraft carrier, loss of, 86

(Profiles: Pages Pl-P26. Plans: P27-P116.)

A. = Argentina; B. = Brazil; C. = Chile; Col. = Colombia; D. = Netherlands; De. = Denmark; F. = France; Fin. = Finland; G. = Greece; G.B. = Great Britain; Ger. = Germany; I. = Italy; J. = Japan; N. = Norway; P. = Poland; Port. = Portugal; R.A.N. = Royal Australian Navy; S. = Spain; S.U. = Soviet Union; Sw. = Sweden; T. = Turkey; U.S.A. = United States of America; Y.S. = Yugo Slavia.

a.a.cr. anti-aircraft cruiser; a.cr. armoured cruiser; a.g. armoured gunboat; air.c. aircraft carrier; air.cr. aircraft cruiser; air.t. aircraft tender; a.s. armoured ship; a.t. aviation transport; b. battleship; b.cr. battle cruiser; c.d. coast defence ship; cr. cruiser; cr.m.l. cruiser minelayer; d. destroyer; f.cl.d. first-class destroyer; f.cl.t.b. first-class torpedo-boat; f.l. flotilla leader; l.cr. light cruiser; m.l. d.t.s. minelaying and training ship; s.cl.d. second-class destroyer; s.cr. scout cruiser; sea-p.c. seaplane carrier; tr.cr. training cruiser.

#### Α

A. Bassini, d. I, P23 Abukuma, l.cr. J., Pl1, P95 "Acasta" class, d. G.B., P24 Achilles, cr. G.B., P21, P36 Adelaide, cr. R.A.N., Plo, P47 Admiral Hipper, cr. Ger., P20, P69 Admiral Scheer, a.s. Ger., **P6**, P67 Admiralty "S" class, d. G.B., P25 Adventure, cr.m.l. G.B., P17, P46 Aigle, f.l. F., P23 Ajax, cr. G.B., P21, P36 Alabama, b. U.S.A., P6 Albatros, f.l. F., P23 Albatros, d. Ger., P24 Albatross, sea-p.c. G.B., P9, P46 Alberico de Barbiano, cr. I., Pl6 Alberto di Giussano, cr. I., Pl6 Aldea, d. C., P24 Algérie, cr. F., P20, P58 Almirante Brown, cr. A., P21, P51 Almirante Cervera, cr. S., P17, P100 Almirante Latorre, b. C., P2, P52 Almirante Valdes, f.l. S., P24 Amazon, d. G.B., p24 Ambuscade, d. G.B., p24 Andrea Doria, b. I., P3, P75 Anson, b. G.B., Pl, P27 Antioquia, d. Col., P24 Aoba, cr. J., P13, P92 Arethusa, cr. G.B., P15, P45 Argus, air.c. G.B., P7
"Ariake" class, d. J., P25 Arkansas, b. U.S.A., P6, Armando Diaz, cr. I., P16

Ashigara, cr. J., Pl2, P90

"Astoria" class, cr. U.S.A., Pl3

Atago, cr. J., Pl2, P90

"Attendolo" class, cr. I., Pl6, P80

Augusta, cr. U.S.A., Pl4, Pl15

Augusto Riboty, f.l. I., P24

Aurora, cr. G.B., Pl5, P45

Australia, cr. R.A.N., Pl1, P37

#### В

Banckert, d. D., P24 Bari, cr. I., Pl7
"Beagle" class, d. G.B., P24 Béarn, air.c. F., P7, P63 Belfast, cr. G.B., P13, P43 Bellona, cr. G.B., P40 "Benson" class, d. U.S.A., Bermuda, cr. G.B., P42 Berwick, cr. G.B., P11, P37 Birmingham, cr. G.B., Pl3, P41 Black Prince, cr. G.B., P40 Blyskawica, d. P., P26 Boise, cr. U.S.A., Pl4 Bolzano, cr. I., p12, p76 Brooklyn, cr. U.S.A., Pl4 Burza, d. P., p23

#### С

Caio Duilio, b. I., p3, p75
Caldas, d. Col., p24
Caledon, cr. G.B., p19, p49
California, b. U.S.A., p2, p106
Campbell, f.l. G.B., p24
Canarias, cr. S., p20, p99
Capetown, cr. G.B., p19, p49
Caradoc, cr. G.B., p19, p49
Cardiff, cr. G.B., p18, p48
Carlisle, cr. G.B., p19, p48
Carlo Mirabello, f.l. I., p24

Cassard, f.l. F., P23 Ceres, cr. G.B., P18, P48 Ceylon, cr. G.B., P15 Chester, cr. U.S.A., Pl4, P115 Chevalier, d. U.S.A., P25 Chokai, cr. J., Pl2, P90 Cincinnati, Pl0, Pl17 s.cr. U.S.A., Cleopatra, cr. G.B., Pl5, **P4**0 Colbert, cr. F., P13, P57 Colombo, a.a.cr. G.B., P19, P49 Colorado, b. U.S.A., P2, Commandant Teste, a.t. F., P9, P64 Concord, s.cr. U.S.A., Plo, P117 "Condottieri" class, cr. I., P16, P81, P82 Conte di Cavour, b. I., P3, P75 Coundouriotis, d. G., P26 Courbet, b. F., P3, P56 Crusader" class, d. G.B., Cumberland, cr. G.B., Pll, P37 Curacoa, cr. G.B., P18, P48

#### T

Danae, cr. G.B., P18, P47
Dao, d. Port., P24
Dardo, d. I., P26
Dauntless, cr. G.B., P18, P47
"Defender" class, d. G.B., P24
Delhi, cr. G.B., P18, P47
Despatch, cr. G.B., P18, P47
Detroit, s.cr. U.S.A., P10, P117
Devonshire, cr. G.B., P10, P35
Diadem, cr. G.B., P40
Dido, cr. G.B., P15, P40
Diomede, cr. G.B., P18, P47

Douglas, f.l. G.B., P24 Douro, d. Port., P24 Dragen, f.cl.t.b. De., P25 Drottning Victoria, c.d. Sw., P20, P103 Dubrovnik, f.l. Y.S., P23 Duca degli Abruzzi, cr. I., P16, P79 Duguay-Trouin, cr. F., P18, P60 Duke of York, b. G.B., Pl, P27 Duncan, f.l. G.B., P24 Dunedin, cr. G.B., P18 Dunkerque, b. F., P4, P54 Dunlap, d. U.S.A., P25 Dupleix, cr. F., P13, P57 Duquesne, cr. F., Pl3, P57 Durban, cr. G.B., P18

#### E

Eberle, d. U.S.A., P25 "Eclipse" class, d. G.B., P25 E. Cosenz, d. I., P23 Edison, d. U.S.A., P25 Ehrensköld, d. Sw., P24 Emden, l.cr. Ger., P18, P73 Emerald, cr. G.B., p11, p38 Emilé Bertin, cr.m.l.F., P16, P62 Enterprise, cr. G.B., Pll, **P38** Enterprise, air.c. U.S.A., P8, P114 Epervier, f.l. F., p23 Ericsson, d. U.S.A., p25 Eugenio di Savoia, cr. I., P16, P80 Euro, d. I., P25 Euryalus, cr. G.B., P15, P40

#### F

Falke, d. Ger., P24 Fanning, d. U.S.A., P25 Farragut " class. U.S.A., P25 Faulknor, f.l. G.B., p23 F. Crispi, d. I., p25 "Fearless" class, d. G.B., " Fiji " class, cr. G.B., Pl5, P42 Filiberto Duca d'Aosta, cr. I., pl6, p80 Fletcher, d. U.S.A., P25 "Flush Deck" type, type, d. U.S.A., P23 Foch, cr. F., P13, P57 Folgore, d. I., P26 Formidable, air.c. G.B., P7, P33 Freccia, d. I., P26 Frobisher, cr. G.B., p22, p39 F. Stocco, d. I., P23 "Fubuki" class, f.cl.d. J., P23 Furious, air.c. G.B., P7, P34

Furutaka, cr. J., Pl3, P92, P93 Fuzo, b. J., P4, P85, P86

#### G

Galicia, cr. S., P17, P 100 Gambia, cr. G.B., P15 G. Carini, d. I., P23 Gen. A. Cantore, d. I., P23 Gen. A. Cascino, d. I., P23 Gen. A. Chinotto, d. I., P23 Gen. A. Papa, d. I., P23 Gen. C. Montanari, d. I., P23 Gen. M. Prestinari, d. I., **P23** Georges Leygues, cr. F., Pl5, P59 Gerfaut, f.l. F., P23 Giorgios Averoff, a.cr. G., P12, P74 Giulio Cesare, b. I., P3, P75 G. la Farina, d. I., P23 G. la Masa, d. I., P23 Glasgow, cr. G.B., P13, P41 Glentin, f.cl.t.b. De., P25 Gloire, cr. F., P15, P59 G. Medici, d. I., P23 Gneisenau, b.cr. Ger., P6, **P66** Gorizia, cr. I., P12, P77 Gotland, air.cr. Sw., P9, P102 Grayson, d. U.S.A., P25 Greif, d. Ger., P24 Greyhound" class, d.G.B., P24 "Gridley" class, d. U.S.A., **P26** G. Sirtoti, d. I., p23 Guépard, f.l. F., p23 Guiseppe Garibaldi, cr. I., P16, P79 Gustav V, c.d. Sw., P19, P103 Gwin, d. U.S.A., P25

## н

Haguro, cr. J., Pl2, P90 Haruna, c. J., 87 Hawkins, cr. G.B., P22, P39 "Hero" class, d. G.B., P24 Hertzog Hendrik, c.d. D., **P94** " Hibiki " class, d. J., P25 Hiyei, b. J., P85 Hobart, cr. R.A.N., Pl5, P44 Hogen, f.cl.t.b. De., P25 Honolulu, cr. U.S.A., Pl4 Hosho, air.c. J., P8, P89 Howe, b. G.B., Pl, P27
"Hunt" class, d. G.B., P26
Hvalen, f.cl.t.b. De., P25 Hyatt, d. C., P24 Hydra, d. G., P26 Hyuga, b. J., P2, P85 [ 5 ]

#### •

Idaho, b. U.S.A., P5, P107 Illustrious, air.c. G.B., P7, P33 Ilmarinen, a.g. Fin., P21, P53 Iltis, d. Ger., p24 Indiana, b. U.S.A., P6 Indianapolis, cr. U.S.A., Pl4, Pl18 Indomitable, air.c. G.B., P7, P33 Inglefield, f.l. G.B., P23 Ingraham, d. U.S.A., P25 "Intrepid" class, d. G.B., Iowa, b. U.S.A., Pl Ise, b. J., P2, P85 Isudzu, l.cr. J., P11, P95

#### .

Jaguar, d. Ger., P24
Jamaica, cr. G.B., P15, P42
"Javelin" class, d. G.B., P25
Jean-de-Vienne, cr. F., P15, P61
Jeanne d'Arc, tr.cr. F., P14, P61
Jenkins, d. U.S.A., P25
Jintsu, cr. J., P10, P94

#### K

Kato, cr. J., P13, P93 Kamikase" class, f.cl.d. J., P24
"Kaya" class, s.cl.d. J., P25 Kearney, d. U.S.A., P25 "Kelly" class, d. G.B., P25 Kempenfelt, f.l. G.B., P24 Kent, cr. G.B., Pl1, P37 Kenya, cr. G.B., P15, P42 Keppel, f.l. G.B., P24 Kersaint, f.l. F., P23 King George V, b. G.B., Pl. P27 Kinu, l.cr. J., P11, P95 Kinugasa, cr. J., P13, P92 Kirishima, b. J., P2, P87 Kiso, l.cr. J., Pl1, P95 Kitakami, l.cr. J., Pl1, P95 Klas Horn, d. Sw., P24 Klas Uggla, d. Sw., P24 Köln, l.cr. Ger., Pl5, P70 Kondor, d. Ger., P24 Kongo, b. J., P2, P87 Koryu, air.c. J., P8 Krasni Kavkaz, cr. S.U., **P19** Kuma, l.cr. J., Pll, P95 Kumano, cr. J., P20, P91

#### T

La Argentina, cr. A., P18 La Galissonnière, cr. F., P15, P59

Lamotte Picquet, cr. F., P18, P60 Lampo, d. I., P26 Langley, air.t., U.S.A., P7 La Rioja, f.l. A., P24 L'Audacieux, f.l. F., P23 La Valette, d. U.S.A., P25 Laxen, f.cl.t.b. De., P25 Leander, cr. G.B., P21, P36 "Leander" class, cr. R.A.N., P15, P44 Le Chevalier-Paul, f.l. F., P23 "Le Fantasque" class, f.l. F., p23 Leipzig, *l.cr.* Ger., **P20**, **P71** Le Malin, f.l. F., P23
"Leningrad" class, d. S.U., Léopard, f.l. F., P23 Leopard, d. Ger. P24 Le Terrible, f.l. F., P23 Le Triumphant, f.l. F., P23 Lima, d. Port., P24 L'Indomitable, f.l. F., P23 Lion, f.l. F., P23 Livermore, d. U.S.A., P25 Liverpool, cr. G.B., P13, P41 London, cr. G.B., P10, P35 Lorraine, b. F., P3, P55 Louisville, cr. U.S.A., Pl4, Pl 15 Luchs, d. Ger., P24 Ludlow, d. U.S.A., P25 Luigi Cadorna, cr. I., P16, P82 Lutzow, a.s. Ger., P6, P68 Lynx, f.l. F., P23

### M

" Maass " class, d. Ger., P23 Mackay, f.l. G.B., P24 "Mahan" class, d. U.S.A., Malaya, b. G.B., P5, P30 Malcolm, f.l. G.B., P24 Marat, b. S.U., P3 Marblehead, s.cr. U.S.A., P10, P117 Marseillaise, cr. F., Pl5, P59 Martino, d. I., P25 Maryland, b. U.S.A., P2, P105 Massachusetts, b. U.S.A. P6 Mauritius, cr. G.B., Pl5, P42 "Maury" class, d. U.S.A., P26 Maya, or. J., P12, P90 Memphis, s.cr. U.S.A., P10, Pll7 Mendez Nuñez, l.cr. S., Pll, **Pl01** Mendoza, f.l. A., r24Meredith, d. U.S.A., P25 Miguel de Cervantes, cr. S., P17, P100 Milan, f.l. F., P23 Milwaukee, s.cr. U.S.A., Plo,

P117

Minas Geraes, b. B., P3, P53 "Minekase" class, f.cl.d. J., P24 cr. U.S.A., Minneapolis, P.13, P119 Miraglie, sea-p.c. I., P9 Mississippi, b. U.S.A., P5, P107 Missouri, b. U.S.A., Pl Mistral, d. F., P23
"Mogami" class, cr. J., P89 Monssen, d. U.S.A., P25 Montcalm, cr. F., Pl5, P59 Montecuccoli, cr. I., Pl6, P81 Montrose, f.l. G.B., P24 Moreno, b. A., P3, P50 Möwe, d. Ger., p24 Mutsu, b. J., P2, P84 "Mutsuki" class, f.cl.d. J., P24 Muzio Attendolo, cr. I., P16, P81 Myoko, cr. J., P12, P90

#### N

Nachi, *cr*. J., p12, p90 Nagara, l.cr. J., P11, P95 Nagato, b. J., P2, P84 Naka, cr. J., Pl0 Nashville, cr. U.S.A., Pl4 Natori, l.cr. J., Pl1, P95 Navarra, cr. S., p17, p101 "Navigatori" class, f.l. I., P23 Nelson, b. G.B., P4, P28 Nevada, b. U.S.A., P6, P108 Newcastle, cr. G.B., Pl3, P4l New Jersey, b. U.S.A., Pl New Mexico, b. U.S.A., P5, P107 New Orleans, cr. U.S.A., P13, P119 New York, b. U.S.A., P5, Pl 10 N. Fabrizi, d. I., P23 Nicholas, d. U.S.A., P25 Nicholson, d. U.S.A., P25 Niels Juel, cr. De., P22 Nigeria, cr. G.B., Pl5 Nordenskjold, d. Sw., P24 Norfolk, cr. G.B., P10, P35 North Carolina, b. U.S.A., Рl Northampton, cr. U.S.A., PI4 Notoro, sea-p.c. J., P9 Nurnberg, l.cr. Ger., P21, P72

0

O'Bannon, d. U.S.A., P25 October Revolution, b. S.U., P3 Oi, l.cr. J., P11, P95 Oklahoma, b. U.S.A., P6, P108 Olay Trygvason, m.l. & t.s. N., P22, P97 Omaha, s.cr. U.S.A., P10, P117 Orella, d. C., P24 Orion, cr. G.B., P21, P36 Ornen, f.cl.t.b. De., P25 Oscar II, b. Sw., P1, P102 Ostro, d. I., P25 Ouragon, d. F., P23

#### P

Paris, b. F., P3, P56 Paris Commune, b. S.U., P3 Penelope, cr. G.B., Pl5 Pennsylvania, b. U.S.A., P5, **P**109 Pensacola, cr. U.S.A., Pl4, P116 Percival, d. U.S.A., P25 Philadelphia, cr. U.S.A., Pl4 Phœbe, cr. G.B., P40 Phœnix, cr. U.S.A., Pl4 Piet Hein, d. D., P24 Plunkett, d. U.S.A., P25 Portland, cr. U.S.A., Pl4, P118 Primauguet, cr. F., P18, P58 Prinz Eugen, cr. Ger. P69 Profintern, cr. S.U., Pll, P98. (Now Krasny Krym) Provence, b. F., P3, P55

#### Q

Q. Sella, d. I., P25 Quarto, s.cr. I., P12, P83 Queen Elizabeth, b. G.B., P5, P31

#### $\mathbf{R}$

Radford, d. U.S.A., P25 Raleigh, s.cr. U.S.A., P10, Pll7 Ramillies, b. G.B., P5, P29 Ranger, air.c. U.S.A., P8, P113 Renown, b.cr. G.B., Pl, P32 Resolution, b. G.B., P5, P29 Revenge, b. G.B., P5, P29 Richmond, s.cr. U.S.A., P10. Pll7 Riquelme, d. C., P24 Rivadvaia, b. A., P3, P50 Rodney, b. G.B., P4, P28 Royal Sovereign, b. G.B., P5, P29 Royalist, cr. G.B., P40 Ryujo, air.c. J., P8, P88

#### 9

Saetta, d. I., p26 St. Louis, cr. U.S.A., p14 Salt Lake City, cr. U.S.A., p14, p116 San Francisco, cr. U.S.A., p13, p119 San Solferino, d. I., p25 São Paulo, b. B., p3, p53

Saratoga, air.c. U.S.A., P8, P112 Savannah, cr. U.S.A., Pl4 Scylla, cr. G.B., P15, P40 Secadler, d. Ger., P24 Sendai, cr. J., Pl0 Serrano, d. C., P24 Seyditz, cr. Ger. P69 Sheffield, cr. G.B., P13, P41 Shropshire, cr. R.A.N., P10, P35 Simoun, d. F., P23 Sirius, cr. G.B., P15, P40 "Somers" class, d. U.S.A., P26 South Dakota, b. U.S.A., P6 "Southampton" class, cr. G.B., p13, p41, p43 Spetzai, d. G., P26 Strale, d. I., P26 Strasbourg, b. F., P4, P54 "Stremlitelni" class, class, S.U., P26 Stuart, f.l. R.A.N., P24 Suffolk, cr. G.B., Pll, P37 Suffren, cr. F., Pl3, P57 Sumatra, cr. D., Pl7 Sussex, cr. G.B., P10, P35 Suzuya, cr. J., p20, p91 Sverige, c.d. Sw., P19, P103 Swanson, d. U.S.A., P25

T

Takao, cr. J., P12, P90
Tama, l.cr. J., P11, P95
Taranto, l.cr. I., P10
Tartu, f.l. F., P23
Tatsuta, l.cr. J., P11, P95
Tejo, d. Port., P24
Tempête, d. F., P23
Tennessee, b. U.S.A., P2, P106
Texas, b. U.S.A., P5, P110
Tiger, d. Ger., P24
Tigre, f.l. F., P23
Tikuma, cr. J., P20, P91
Tirpitz, b. Ger., P4, P65
Tone, cr. J., P20, P91
Tornado, d. F., P23

Tourville, cr. F., P13, P57
Tramontane, d. F., P23
"Trento" class, cr. I., P17, P76, P78
Trenton, s.cr. U.S.A., P10, P117
"Tribal" class, d. G.B., P23
Trieste, cr. I., P17, P78
Trombe, d. F., P23
Tromp, cr. D., P21
Tucuman, f.l. A., P24
Turbine, d. I., P25
Tuscaloosa, cr. U.S.A., P13, P119
Typhon, d. F., P23

U

Uganda, cr. G.B., Pl5

V

Vainamöinen, a.g. Fin., P21, Valiant, b. G.B., P5, P31 Valmy, f.l. F., P23 Valorous, d. G.B., P24 Vanessa, d. G.B., P24 Van Ghent, d. D., P24 Van Nes, d. D., P24 Vanoc, d. G.B., P24 Vanquisher, d. G.B., P24 Vansittart, d. G.B., P24 Vauban, f.l. F., P23 Vauquelin, f.l. F., P23 Vautour, f.l. F., P23 Velox, d. G.B., P24 Vendetta, d. G.B., P24 Venomous, d. G.B., P24 Verdun, f.l. F., P23 Verity, d. G.B., P24 Versatile, d. G.B., p24 Vesper, d. G.B., P24 Victorious, air.c. G.B., P7, **P33** Vidella, d. C., p24 Vidette, d. G.B., p24 Vimy, d. G.B., P24 Vinticinco de Mayo, cr. A., P21, P51 Violent, d. G.B., P24

Viscount, d. G.B., P24 Vivacious, d. G.B., P24 Volunteer, d. G.B., P24 Vouga, d. Port., P24

W

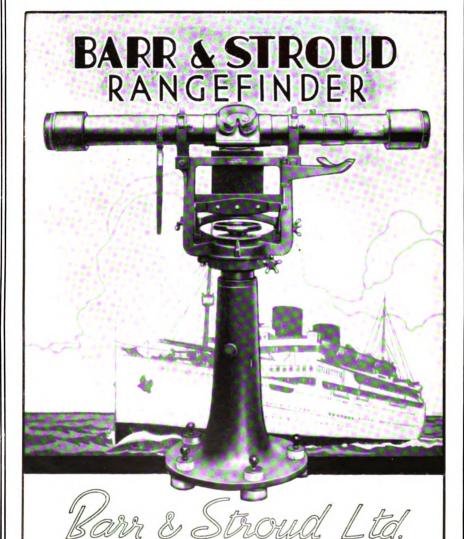
"Wakatake" class, s.cl.d. J., **P2**5 Walker, d. G.B., **P24** Walpole, d. G.B., **P24** Walrus, d. G.B., P24 Wanderer, d. G.B., P24 Warspite, b. G.B., P5, P31 Warwick, d. G.B., P24 Washington, b. U.S.A., P1, P104 Westcott, d. G.B., P24 West Virginia, b. U.S.A., P2, P105 Whitehall, d. G.B., P24 Whitshed, d. G.B., P24 Wichita, cr. U.S.A., Pl4, P119 Wilkes, d. U.S.A., P25 Winchelsea, d. G.B., P24 Windsor, d. G.B., P24 Winconsin, b. U.S.A., Pl Wishart, d. G.B., P24 Witch, d. G.B., p24 Witherington, d. G.B., P24 Wivern, d. G.B., **P24** Wolf, d. Ger., P24 Wolverine, d. G.B., p24 Woolsey, d. U.S.A., P25 Worcester, d. G.B., P24 Wrestler, d. G.B., P24

Y

Yamashiro, b. J., P4, P86 Yavouz Sultan Selim, b.cr. T., P4 Yubari, l.cr. J., P21, P89 Yura, l.cr. J., P11, P95

Z

"Zara" class, cr. I., Pl2, P77



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## INDEX TO ADVERTISERS

A.V.A. Ltd							xxii
BARR AND STROUD, LTD							xlv
BLACK & Co. (WIRE ROPES), LTD							xix
BLACKBURN AIRCRAFT							xxxvi
BRITISH ANTI-FOULING COMPOSITE		PAIN	т Со.,				xxiv
BRITISH POWER BOAT CO., LTD.,				••	••	••	xlii
British Thomson Houston Co.,			••	••	••	••	xvi
British Wire Products, Ltd.			• •	••	• • •	• • •	xxv
Brown Bros & Co., Ltd	•••	•••	• • • • • • • • • • • • • • • • • • • •	•••	• • • • • • • • • • • • • • • • • • • •	• • •	xv
Brown & Co., Ltd., John							
Brown, Ltd., S. G	• •	• •	• •	••	••	••	
CAMMELL LAIRD & Co., LTD	• •	••	••	••	• •	• •	XXX
	••	• •	• •	• •	• •	• •	x
Chadburns (Liverpool) Ltd.	••	• •	••	••	• •	••	iv
CLARKE, CHAPMAN & Co., Ltd.		• •	• •	• •	• •	• •	xiv
FAIREY AVIATION Co., LTD., THE		• •	• •	• •	• •	• •	xxxv
FIRTH AND BROWN, LTD., THOMAS		• •	• •	••	• •	••	xx
FOLLAND AIRCRAFT LTD		• •	• •	• •	• •	• •	xxxiv
HADFIELDS LTD	••	••	• •	• •		• •	iii
HARLAND AND WOLFF LTD	• •	• •				• •	v
HARVEY & Co. (LONDON) LTD., G	. A.						xxviii
HAWTHORNE, LESLIE & Co., LTD.	, R. &	W.					xi
IMPERIAL CHEMICAL INDUSTRIES I	TD.						xxvii
LONDON MARINE SALVORS LTD.							xlii
MARCONI'S WIRELESS TELEGRAPH					••	••	xxxviii
			• •	••	••	••	xx
Morrisons	• •	• • •		••	••	•••	xxxvi
Napier & Son, Ltd., D	••	• • •	••				xxxii
NAVY RECORDS SOCIETY, THE	••		• •	••	••	••	xviii
		••	• •	••	••	• •	
Parsons Chain Co., Ltd		"	••	••	• •	• •	xxvi
PARSONS MARINE STEAM TURBINE	-	-		••	• •	••	x
R F D Co., LTD		• •	• •	• •	• •	• •	x
RICHARD & Co., LTD., ALEXANDE		• •	• •	• •	• •	• •	xxx
ROBINSON & Co., LTD., A	• •	• •	• •	• •	• •	••	xxix
ROTOL LTD	• •	• •	• •	• •	• •	• •	ix
RYLAND LTD., LLEWELLYN	• •	• •	• •	• •	••	• •	xxii
SAUNDERS ROE	• •	••		• •			xxxix
SHORT BROTHERS (ROCHESTER AND	р Вері	ord)	LTD.		• •		xxxiii
Siebe, Gorman & Co., Ltd						• •	xxix
SWAN, HUNTER AND WIGHAM RIC	HARDS	ON, LT	D			• •	xv
THORNYCROFT & Co., Ltd., John	I.			• •			xiii
						• •	xli
Vickers-Armstrongs Ltd	••	••			••	••	i, xxxi
Vosper	• • • • • • • • • • • • • • • • • • • •	• • • • • • • • • • • • • • • • • • • •	• • •	• • •	••		ii
Wallsend Slipway and Enginer						••	
WALLSEND SLIPWAY AND ENGINER WHIPP AND BOURNE LTD					••	• •	
					••	• •	xxviii
WHITE AND CO., LTD., J. SAMUEL	T	••	••	• •	• •	• •	xii
WILLIAMSON MANUFACTURING Co.,					• •	• •	xl
Varrow & Co., Ltd							vii

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